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PRESIDENT'S ADDRESS

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DURHAM

As a Virginian I regard it an unusual privilege to address you, my colleagues of North Carolina, here in my native state. After living in North Carolina for thirty years I am proud to call myself a Tar Heel, but like all Virginians, wherever they may live, I take some pride in announcing my place of birth. Many Virginians simply refuse to leave home. When the boundary line between Virginia and North Carolina was moved northward some one hundred and fifty years ago, the Virginians left to the south refused to remain, saying they would not become North Carolinians because they had always heard that the climate of North Carolina is distinctly inferior to that of Virginia. We are grateful to the people of this commonwealth for their willingness to accept and welcome us here.

This assembly of North Carolinians on the soil of Virginia in this critical year of world uncertainties is reminiscent of the muster of North Carolinians in defense of Virginia and the Southern cause in another critical time in the great War between the States. The blood of the many thousands of Tar Heels, wounded or buried on the Virginia battlefields, is forever a part of the common heroic heritage of our two states and of our reunited states. Those North Carolinians marched shoulder to shoulder with Virginians under the immortal Lee, the valiant Jackson, the gallant Pelham, the daring Stuart, and with all the others who so courageously carried on the struggle for the lost cause.

As we meet here today, Virginians and North Carolinians are again striving to reach common goals, and in their efforts there is a considerable degree of cooperation. Those who mustered on this historic soil in the 1860's went forth to conduct war and destroy life. Their grandsons of both states are today concerned in a great united effort to preserve peace, promote health, and save life. The peoples of these two states have shared a noble inheritance that the years must never weaken nor efface.

The honor you have conferred upon me, the presidency of this Society, is one to be greatly cherished, and, in all humility, I thank you for it. It has been an honor poorly deserved and, I am afraid, inadequately executed. Those who would accept office in organized medicine today take unto themselves responsibilities of much importance. Any progress that may have been attained by your Society this year can be attributed to the teamwork of your splendid Executive Committee, together with the valuable help of your secretary and those of our Society who, through past experience, have contributed notably to our undertakings.

What I will say to you at this time represents a composite of ideas gained from work with our several committees and from conferences with the executive officers and with others, regarding our progress and our needs for the future. Since our last meeting many matters of importance have presented themselves for consideration. Your Executive Committee has striven to meet them squarely. The Society as a whole has not always approved of their action. There has not been complete accord. This is not a surprising

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circumstance among more than two thousand doctors. No one will doubt that each has acted in conformance with the dictates of his conscience; and none will deny each the right to his own opinion. Controversy is the mother of progress. Advancement comes after exchange of ideas, with all sides of various propositions exposed.

As president of the Society, I have on all occasions sought to promote the views and endorsements of the Executive Committee, since county and district societies are there represented. I sincerely hope that in the altercations that have ensued no wounds have been opened that will not quickly heal. Reasonable unity among us is necessary if we are to cope successfully with the challenges facing us in these days of social revolution and rapid advance of medical science.

Medicine as a Social Science

While the office of president of your Society involves considerable activity and at least a moderate element of what may be termed work, I can assure you that these are well compensated by a number of pleasant and agreeable factors. Not the least of these rewards is that of meeting and knowing more intimately a large segment of our profession. The outstanding impression I have gained from these contacts this year is that the doctors of our state are becoming increasingly conscious of the social aspects of our calling. Medicine today is freely acclaimed a social science. The very special purpose of our work as doctors is to keep individuals adjusted to their position in society by preventing disease among them or by hastening their recovery and return to activity after sickness. The promotion of health and the restoration of the sick to their former position among their associates are indeed our prime objectives. Unfortunately, our medical educators, in planning our training, have not in the past given full recognition to this fact. The rapid strides of science have so pressed the medical curriculum that this situation must be regarded as excusable. Then, too, since disease is a biologic process, its causes must be sought in the realm of nature. The treatment of the sick person is concerned primarily with the skillful use of physical, chemical, and biologic forces. Therefore, medicine is a science and the practitioners must be scientists. The medical curriculum has been designed upon this dictum.

From my contacts this year it is obvious that our members are conscious of the fact that their purely scientific training is not enabling them to cope easily with all the problems that arise before them. One hears in our county society meetings eager discussions of medical insurance; of medical care of large groups such as school children and veterans; of spastics and mental cases; of infant and maternal welfare; of nursing and various forms of medical technology; of hospitals and clinics; and of other topics that they find are important in the conduct of their work aside from the actual care of patients.

Changes that have occurred in the practice of medicine over the past twenty years, and which doubtless were hastened by the war, have served to fix our attention more and more upon these social aspects of our work. In the past, the sick person consulted his doctor as an individual, and was treated as such; their relationship was largely personal. Today much of the practice is done by groups of doctors aided by several types of medical assistants. Persons are treated in hospitals and clinics and are seen by many professional people before they are given the final answer regarding their ailment. Not too many years ago a hospital was operated by a doctor, and his personality dominated the institution. It is not to be denied that many advantages accrued from this system. Because of the multitude of medical and surgical services, however, as well as the expense involved in the operation of a modern hospital, it has become necessary for communities to accept responsibilities for maintenance of these institutions.

The tendency of our population to organize into groups representing different spheres of interests has made it possible for them to demonstrate the need for greater spread of good medical care, and to emphasize the excessive expense of illness. It has been easy for national radical elements of our population to magnify these demands and attempt to capitalize upon them. Those who would seek to impose upon us a federal system of compulsory health insurance, and at the same time form a huge national bureaucracy with unlimited power, have been at least temporarily thwarted in their

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schemes because of a rather belated interest on the part of our profession in the social phases of our work. This interest is nation-wide: but I say with considerable pride that the Medical Society of the State of North Carolina has gone further and accomplished more in this regard than any other group in this country.

North Carolina's Medical Care Program

I shall not attempt to recount to you the details of the Medical Care Program in our state. It is enough for us to realize and clearly understand that the people of our state have spoken with unmistakable emphasis; that it is their will; that state funds shall be used to supplement local effort and federal grants to provide medical facilities within the state; and that the state shall provide complete medical education for its citizens. This decision came after painstaking studies which showed that North Carolina needs better distribution of facilities, additional personnel, and more insurance against illness. The plan stresses local control of medical resources, and thereby conforms to the American democratic philosophy of regulation; it is the direct antithesis of centralized or federal domination of the type that has been sponsored by the insurgent elements in our national Congress. Our program brings existing facilities, and those to be provided, to every reputable physician in a given community, regardless of his political affiliations and without interference from others. In this way it stimulates initiative and professional ambition. It is truly a sincere effort on the part of the medical profession and the citizens of our state to promote a state-wide system of improved medical care and professional freedom.

The successful prosecution of this enterprise—the first in the nation on a state-wide basis—was remarkable in many respects. In it we found all classes of our people engaged in an overall, concerted effort to effect a service for the state. Sitting down together in ardent deliberation were leaders of both races, industrialists and labor representatives, farmers and city folk, Republicans and Democrats, people of various religions and creeds—all working together in the interest of a common cause. The drama they enacted lends reason for optimism for future achievements in the field of social welfare in our Southland. It will serve as an example of whole-hearted cooperation of the citizenship that may well be emulated throughout our section when people come together to study problems of community interest and welfare.

Since the program of the Medical Care Commission is essentially medical, it is incumbent upon us as the fundamental medical agency of the state to foster the aims of our citizens and to take to our hearts most seriously the issues involved. We, and we alone, can bring to a successful climax the hopes that have been expressed. The people want better distribution of good medical care. They have voted their money for it, knowing that the doctors of this state are the only ones who can deliver it. Their confidence is in us. This Society will not underestimate the confidence our people have placed in us, but will, through improved organization and increased determination, seek to strengthen itself for the challenge that is before us.

How may we proceed to serve these requirements better? We speak often of organized medicine. Are we sufficiently organized? Why are we organized? How may we attain our goal? These questions must be answered in the minds of all of us; for then only can we hope to proceed to the task of carrying on a progressive program that will react to the credit of our Society and to the welfare of the state.

The Need for Greater Organization

Are we sufficiently organized? To this question I think most of us will answer negatively. It is true that geographically and physically we have an adequate skeleton arrangement of groups. That there is little coordination or concentration of effort we will all agree. Our system is as it was fifty years ago. We have been fortunate in securing, repeatedly, able practitioners who have been willing to make the sacrifice of serving as secretary for us, and carrying the burden of our organization. My memory of Dr. L. B. McBrayer and Dr. Tom Long is that of efficient and earnest men who did all they could for this Society. Dr. Roscoe McMillan is now serving well, and is due most credit for our operation during the past year. His kindness to me will always be remembered. He is due the whole-hearted thanks of this Society, because he has done and is doing all that any practicing doctor can do for us.

It seems certain that we have outgrown this system. Ours is the only organization

of comparable size in the state that does not have a full-time executive secretary. Such an official, acting as an assistant to our present secretary, is necessary if details of our various activities are to be properly tied together. Permanent offices adequately staffed will be required. This Society should dignify itself in such a way as to command respect of the citizenry, commensurate to its importance in public affairs of the state. This objective can be accomplished only through a more efficient organization.

The Purposes of Organized Medicine

After a half century of experience it is evident that doctors of today are ready to answer the question, "Why are we organized?" In the early history of the American Medical Association, recently so well recorded by Dr. Morris Fishbein, one may read that in that day the chief function of the medical society was the preservation of the influence of the doctors. During that half century we have witnessed the birth of many organizations. In some instances they have served the public interest well; but all too often their chief function has come to be self-elevation and domination of other interests, until today organized minority pressure groups are possibly the chief detriments to national unity and well-being. There are some professional organizations whose chief aim is to increase their prestige and income, and at the same time reduce hours of service to the public. Physicians of this country, with their high standards of education, are not making this mistake. The more progressive element of our profession is demanding strong coordination of effort dedicated to public service, for in this way only will we be capable of fulfilling our obligation to our profession and to the people. We, then, are organized to promote in every way possible the extension of better medical care to all segments of our population.

Problems Facing Organized Medicine in North Carolina

If this be our purpose, how may we best pursue it? Every effort should be made to convey our intentions to the public, and in that way secure its confidence. As a whole, our profession has never taken public opinion very seriously and, as a result, we do not now enjoy the degree of confidence of the people that we deserve. It is evident then that improvement of public relations is one of our prime immediate requirements. A stronger organization with increased personnel will be most helpful in accomplishing this end.

Spreading the costs of medical care

The profession has a real responsibility in making its services more generally available. The increased cost of medical care calls clearly for some form of group payment, in order that the risks of sickness may be more evenly spread. The economics of illness deserves much study. I am glad to report to you that many of the best minds in our Society are now engaged in studying this problem of complete medical coverage by insurance. Poverty and low income breed disease. Medical and hospital expenses are often excessive, if not at times devastating.

The House of Delegates last year directed the appointment of a special committee to cooperate with others in an effort to promote amalgamation of our two local hospital insurance companies. Realizing the importance of this merger, I sought the services of the ablest and most beloved member of our Society to direct this work. He, Paul McCain, readily accepted the commitment. The tragedy of his death occurred upon his journey to the second meeting of his committee. In his memory, let it be recorded that he died in the service of the Medical Society of the State of North Carolina that he loved and served so well.

Health conditions among the Negroes

Health conditions among the Negroes of our state seriously demand our attention. Sickness and need raise no racial question. Our profession will do well to study and cooperate fully with the Medical Care Commission's program to improve medical facilities for these people who constitute one third of our population.

Shortage of hospital personnel

Hospitals and clinics are our workshops; and the efficient practice of modern medicine demands that the physician have access to, at least, a diagnostic institution of some type. The present problems of the hospital are many and deserve the sympathetic consideration of us all. It is well to remember that in the conduct of the modern hospital

no less than twenty-odd specialized medical workers are necessary. The shortage of these people is acute. It would seem incumbent upon our larger hospitals and our medical schools to advance immediately plans for producing more of this personnel. Physicians can do much to assist the institutions in recruiting our youth for service in these fields. The Medical Care Commission's plan stresses improved medical educational facilities at all levels, and places upon the state the responsibility of assuming leadership in this regard, in cooperation with all existing schools and hospitals. This proposed integration of medical care and medical education holds great promise of success.

Overemphasis on specialization

It would seem to one who professes no special knowledge or training in medical education that there is need at this time for a careful survey of methods and results in this field. With the general spread of better facilities there will be a place of increasing importance for the general practitioner in the years ahead. He must not become the forgotten man in medicine; but he surely will if 90 per cent of the graduates continue to seek places in the specialties. Medical education must seek means to dignify general practice by special undergraduate training, as well as by continuing postgraduate education. The war has taught us the wide prevalence of emotional disabilities, and emphasizes the fact that practitioners must abandon the old thinking habits of rigidly separating body from mind. It is to be hoped that our North Carolina schools will take the lead in this country in training their students adequately in psychiatry, psychology, and sociology, so that their graduates will meet the demands of an enlightened public for interpretation of these emotional disorders.

Shortage of nurses

In evaluating our personnel needs, special mention of nursing is warranted, since it constitutes a most serious problem confronting our hospitals and doctors at this time. Your Executive Committee supported the State Hospital Association in sponsoring the practical nurses' bill in the last legislature. One-year courses are being organized in several hospitals, and candidates for the classes are sought at this time. It will introduce a new type of worker in medicine, and one that is sorely needed. Most bedside nursing in the hospital and in the home can be efficiently performed by the trained practical nurse. All of our hospitals, large and small, are capable of training them; and it is to be hoped that the next few years will see many of these practical workers administering to our patients.

Other problems

Other committees of your Society are considering such matters as our relation with the Workman's Compensation Commission, revision of the Medical Practice Act with provisions for a basic science law, improved postgraduate medical education, infant and maternal welfare, better medical attention to veterans—all are working ably and earnestly to the end that the Society may intelligently deal with these affairs. We are especially indebted to Dr. Hubert Haywood and his Legislative Committee for their skillful and efficient work during the meeting of the legislature. Every issue in which we had an interest was settled to our satisfaction. This fact should emphasize the measure of confidence that the people of the state impose in their medical profession. It presents to us the very real responsibility of justifying their trust and esteem.

Conclusion

Let us improve our organization, bring our units into closer understanding one with the other, reconcile, so far as possible, our various opinions, and democratically arrive at decisions that speak the voice of the majority. Public confidence and respect are precious and priceless. Medicine in North Carolina will advance in the years to come in proportion to the unity within our Society directed toward improved medical care of all groups of our citizens. Ours is a great opportunity at this time. We must be prepared to pay today's price for tomorrow's values. A fine profession, unsurpassed medical schools, a large hospital construction program, a loan fund for medical students, state contribution to our hospitals, all supported by strong public opinion, constitute the media that doctors of no other state have been offered. That we will gratefully and graciously accept the challenge confronting us, I have no doubts. It is my firm convic-

tion that the doctors of North Carolina, being deeply interested in the welfare of their state, will in united effort strive to carry to our people the best in hospital and medical service.

SOME CLINICAL AND PHYSIOLOGIC PROBLEMS IN CASES OF PORTAL CIRRHOSIS

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There are few chronic diseases which have been studied in as detailed and thorough a manner over so long a period as has portal cirrhosis. In the fifty years which followed Laennec's classic description in 1826[1], the pathologic and clinical aspects were catalogued; one may find a great part of the basic data bearing on these points in Murchison's well-known lectures in 1877[2]. During the next forty-five years no notable progress was recorded, but with the publication in 1921 of observations made by Mann and Magath on the effects of experimental hepatectomy[3], a period of physiologic research was ushered in. The studies of the past quarter century have greatly extended medical knowledge of the function of the liver and its metabolic activity, and have emphasized the reparative and regenerative capacity of the liver. The relation of diet and nutrition to the structure and function of the liver has been demonstrated during this same period.

Now, at the end of another quarter century of continued study, it appears worth while to take stock of the problems which remain and to record recent progress. It seems particularly appropriate to do so at this time, since the most carefully studied epidemic of infectious hepatitis on record is subsiding and an unusual opportunity to study its possible effects on the production of the more chronic forms of hepatic injury is at hand. It is the purpose of this paper to call attention to new ideas and developments as they refer to portal cirrhosis, and to comment on their physiologic and clinical aspects. To begin with, a definition of cirrhosis is necessary. For purposes of this discussion, one may use the term as Mallory did, in its broadest pathologic sense, and classify as cirrhosis "all sclerosed conditions of the liver whether progressive or not in which destruction of the liver cells is associated with actual or apparent increase in connective tissue."[4] As various authors have stated, there is only one cirrhosis, which may present a multitude of clinical and anatomic variations, depending on a diversity of factors.

The Nutritional Factor in Hepatic Injury

As has been pointed out many times, a large number of toxic agents may cause degeneration and necrosis of the hepatic cords, and their continued action may produce chronic destructive changes in the hepatic lobules, with subsequent nodular regeneration and proliferation of connective tissue from the portal triads. The nutritional state of the liver at the time these toxins are active apparently makes a tremendous difference in the pathologic response. It is now believed that nutritional factors *alone*, without the aid of hepatoxic substances, may produce degenerative lesions.

There is a considerable amount of evidence of particular importance bearing on the relation of diet and nutrition to human cirrhosis. To present this evidence, a brief consideration of some experimental data is required. In 1942, Gyoergy and Goldblatt[5] noted that parenchymatous and fatty degeneration, necrosis, and sometimes fibrosis developed in the livers of rats maintained on a diet deficient in the vitamin B complex. These changes were prevented by the addition of yeast or yeast extract to the diet. Earlier, Rich and Hamilton[6] had shown that a diet adequate in respect to all its essential constituents and containing adequate amounts of thiamine hydrochloride, nicotinic acid, riboflavin and vitamin B was capable of producing marked

Read at the Watts Hospital Symposium, Durham, February 13, 1947.

From the Division of Medicine, Mayo Clinic.

1. Laennec, R. T. H.: Traite de l'Auscultation me'diate et des Maladies des Poumons et du Coeur, Paris, J. S. Claude', 1826, vol. 2.

2. Murchison, C.: Clinical Lectures on Diseases of the Liver, ed. 2, New York, William Wood & Company, 1877.

3. Mann, F. C. and Magath, T. B.: Studies in the Physiology of the Liver: I. Technic and General Effects of Removal. II. The Liver as a Regulator of the Glucose Concentration of the Blood. III. The Nitrogen Constituents of the Blood following Removal of the Liver, Am. J. Physiol. 55:285-287 (March) 1921.

4. Mallory, F. B.: Cirrhosis of the Liver, New England J. Med. 206:1231-1239 (June 16) 1932.

5. Gyoergy, P. and Goldblatt, H.: Hepatic Injury on a Nutritional Basis in Rats, J. Exper. Med. 70:185-192 (Aug.) 1939.

6. Rich, A. R. and Hamilton, J. D.: Experimental Production of Cirrhosis of Liver by Means of Deficient Diet, Bull. Johns Hopkins Hosp. 66:185-198 (March) 1940.

hepatic cirrhosis in rabbits. In animals fed exactly the same diet, but with yeast substituted for the various individual components of the B complex, hepatic lesions did not develop.

Recently, attempts have been made to identify the component of the B complex which is specifically responsible for this phenomenon. Since infiltration of the liver with fat is among the earliest of pathologic changes in experimental cirrhosis, it is natural that particular attention should have been paid to lipotropic substances in this respect. Choline and also methionine have been shown to have a protective effect when fatty infiltration of the liver is induced in laboratory animals. Cystine has a similar effect, while the combination of cystine and choline appears to have even greater protective value. In this connection the representative experiments of Glynn and Himsworth[7] may be considered. They found that, when rats were fed protein-deficient diets, massive acute necrosis of the liver developed in a period of fifteen to fifty days. Restoration of casein to the diet was completely protective. Feeding experiments further narrowed the field, revealing that 20 mg. of methionine a day sufficed to maintain the liver in normal condition. This specific protective effect of methionine thus becomes one of considerable practical importance.

Observations on human subjects subsisting on inadequate and restricted diets are by no means common. The traditionally poor diet of the chronic alcoholic patient and its possible effect on the development of cirrhosis were discussed years ago by Connor[8]. Dietary cirrhosis, uncomplicated by hepatotoxins, has also been studied, but to a much more limited extent. Snapper[9], in commenting on the great frequency of cirrhosis in North China, stated that malnutrition is certainly one of the principal factors in the development of the disease. The diet of the coolie, as described by this observer, is certainly inadequate in respect to protein at least. Hardikar and Rao[10] recently have reported a high incidence of cirrhosis of the liver in southeastern India, where rice is the principal ingredient of the diet, and have commented on the fact that in parts of India where jawar and wheat constitute the staple diet, hepatic disease is relatively rare. Among South African Negroes (Bantus), who subsist chiefly on a meager diet of corn and fermented cow's milk, the incidence of both deficiency disease and cirrhosis is unusually high, the latter condition being noted in four necropsies out of five. Gilbert and Gillman[11] have noted this fact and have shown that cirrhosis developed in rats fed the diet of the natives. In both Indians and Bantus a full diet is usually followed by a disappearance of symptoms.

Meienberg and I[12] have recently reported some observations on a group of prisoners of war who had subsisted on a diet extremely low in protein and sources of the vitamin B complex for from one to nearly four years. No hepatoxic agents were involved, and the incidence of infectious disease during confinement was no greater among the persons studied than in a control group of prisoners. Yet, of the 50 prisoners studied, 19 had various abnormalities of hepatic function, usually associated with a palpable liver, peripheral edema and signs of deficiency disease. In 2 of these cases the clinical picture of cirrhosis was present. One patient, who had required abdominal paracentesis while in a prison camp, still had ascites when examined in a naval hospital, and presented gross laboratory evidence of hepatic dysfunction. Biopsy of the liver showed a definite histologic picture of cirrhosis. In the second case ascites developed after the patient's release from prison, and at the time of examination he had an enlarged liver with strongly positive cephalin-cholesterol flocculation reactions and moderate retention of bromsulfalein. An attempt at needle biopsy was unsuccessful. Both patients recovered on dietary treatment.

It is of course true that few physicians will be likely to encounter a pure dietary cirrhosis, but observations such as those mentioned leave little doubt that the liver of the human being is rendered vulnerable by suboptimal states of nutrition and that a bad

7. Glynn, L. E. and Himsworth, H. P.: Massive Acute Necrosis of the Liver: Its Significance and Experimental Production, J. Path. & Bact. 56:297-305 (July) 1944.
8. Connor, C. L.: Etiology and Pathogenesis of Alcoholic Cirrhosis of Liver, J.A.M.A. 112:307-309 (Feb. 4) 1939.
9. Snapper, I.: Chinese Lessons to Western Medicine, New York, Interscience Publishers, Inc., 1941.
10. Hardikar, S. W. and Rao, V. G.: Ascites in Hyderabad (Deccan): Preliminary Note, J. Indian M. A. 13:1-9 (Oct.) 1943.
11. Gilbert, C. and Gillman, J.: Diet and Disease in the Bantu, Science, n.s. 99:398-399 (May 19) 1944.
12. Meienberg, L. J. and Snell, A. M.: Nutritional Deficiency as a Probable Cause of Hepatic Damage in Repatriated Prisoners of War, Gastroenterol. 7:430-441 (Oct.) 1946.

diet, sufficiently prolonged, will produce cirrhosis. It is generally believed that the extent and severity of the recent epidemic of viral hepatitis were partially conditioned by dietetic factors, at least in some military personnel affected.

Do the Residues of Viral Hepatitis Lay the Groundwork for Cirrhosis?

A definitive answer to this question would be a major contribution to medical knowledge. It will be recalled that Rokitansky[13] and other pathologists of his generation considered cirrhosis to be the end product of an infectious process. There are case reports in the older literature which appear to record the rapid development of atrophic cirrhosis directly following an illness which could well have been infectious hepatitis (see case CXII in Murchison's lectures[2]). Pratt and Stengel[14], Rennie[15], and others[16], notably Jones[17], have called attention to similar cases. The process may be more chronic. Jones described two brothers taken ill during an epidemic of infectious hepatitis; one died, while the other survived fifteen years with chronic jaundice and progressive failure of hepatic function. The latter patient eventually died with ascites and hepatic insufficiency.

From Sweden come word-of-mouth reports of a considerable group of women past the menopause who, following what appeared to be infectious hepatitis of average severity, developed the clinical picture of progressive hepatic destruction with jaundice, ascites, and a terminal state indistinguishable from that encountered in cases of portal cirrhosis. The whole illness was of about a year's duration. The relation of the syndrome to infectious (viral) hepatitis, and the reasons for the peculiar age and sex distribution remain subjects for conjecture.

It is now well established that a considerable number of persons who suffered from infectious jaundice while in military service did not make the expected complete recovery. Some remained jaundiced for many months, but gradually regained their health; in others, who showed little or no jaundice even during their acute illness, the liver remained larger than normal, definite signs of hepatic dysfunction were demonstrated by appropriate tests, and there was a marked tendency to relapse following physical activity[18]. Still others apparently recovered more or less completely, but had a definitely lowered tolerance to physical activity and presented some laboratory evidence, usually minimal, of hepatic dysfunction. I have personally observed examples of each group, as have many other clinicians interested in the problem. Whether the infecting agent is the IH virus[19] producing the naturally occurring form of the disease or the SH virus, which is responsible for the artificially transmitted type having a long incubation period, does not seem to matter in the production of chronic changes. The clinical cases of two young men seen in recent weeks may be used as examples in this connection.

Case 1

In this case infectious (epidemic) hepatitis developed in New Guinea sometime during 1945. The patient had been quite ill and apparently had spent several months in convalescence. He had not been particularly well since then, and complained of weakness, loss of weight, and easy fatigability. At the time this paper was written he had a palpable liver, definite fetor hepaticus, two well-developed nevi araneosi, slight retention of bromsulfalein, and a decidedly positive cephalin-cholesterol flocculation. The prothrombin time was 23 seconds. The urine was negative for bilirubin; the serum bilirubin was normal.

Case 2

This patient, a man aged 33 years, had been known to have diabetes mellitus for about seven years. He had been under treatment with insulin and had not had any particular difficulty in controlling his glycosuria when he was at the Mayo Clinic in December, 1946. In July, 1946, he had sustained an injury to his thorax in an automobile accident, when he suffered from broken ribs, shock, and puncture of a lung. He received some plasma at that time, although the exact amounts were not known. In November, 1946, anorexia, generalized aching pains, malaise, and chronic dull epigastric distress developed. One week later jaundice appeared, and the patient stated that he had acholic stools and bile-stained urine at the time of its appearance. The jaundice increased in intensity for about a week but then seemed to diminish and he felt somewhat improved. This period of improvement, however, was followed by a severe relapse which necessitated hospitalization. At that time edema of the ankles and swelling of the abdomen developed. It was nec-

13. Rokitansky, C.: Handbuch der pathologischen Anatomie, Wien, Bei Braumueller & Seidel, 1842, vol. 3
14. Pratt, J. and Stengel, A.: Toxic Cirrhosis Resulting from Acute Liver Atrophy, Am. J. M. Sc. 175:1-11 (Jan.) 1927.
15. Rennie, J. B.: Infective Hepatitis, with Special Reference to Prognosis, Am. J. M. Sc. 210:18-29 (July) 1945.
16. Altschule, M. D. and Gilligan, D. R.: Chronic Latent Hepatitis Following Catarrhal Jaundice, New England J. Med. 231:315-317 (Aug. 31) 1944.
17. Jones, C. M.: Some Serious Aspects of Infectious (Catarrhal) Jaundice, M. Clin. North America 7:819-832 (Nov.) 1923.
18. Barker, M. H., Capps, R. B. and Allen, F. W.: Chronic Hepatitis in the Mediterranean Theater, J.A.M.A. 129: 653-659 (Nov. 3) 1945.
19. Neefe, J. R.: Recent Advances in the Knowledge of "Virus Hepatitis," M. Clin. North America 30:1407-1443 (Nov.) 1946.

essary to perform a paracentesis on December 22, and 3 quarts (3 liters) of fluid were withdrawn.

At the time of our examination the patient was deeply jaundiced, apathetic, and depressed. There was no fever. His blood pressure was 100 systolic, 60 diastolic. Examination of the heart and lungs was negative. The abdomen showed some distention and contained a small amount of fluid. The liver was very large and firm and reached to the level of the umbilicus. The spleen was not felt. The extremities showed a minor degree of pitting edema.

Urinalysis gave essentially negative results except for glycosuria. The concentration of hemoglobin was 12.4 Gm. per 100 cc. of blood. Erythrocytes numbered 4,080,000 and leukocytes 6,700 per cubic millimeter of blood. Stained smears of the blood revealed macrocytosis. The flocculation reaction for syphilis, and roentgenograms of the thorax, gallbladder, stomach, and esophagus were negative. The concentration of urea was 36 mg. per 100 cc. of blood. The concentration of bilirubin fell from 10.0 mg. to 5.2 mg. per 100 cc. of serum while the patient was under observation. The concentration of cholesterol was 383 mg. and that of cholesterol esters 203 mg. per 100 cc. of plasma. The concentration of protein was 6.73 Gm. per 100 cc. of serum, and the phosphatase was 16 Bodansky units. Fecal urobilinogen was 463 mg. in twenty-four hours. The prothrombin time was 19 seconds.

Needle biopsy showed fairly normal hepatic cellular structure, with some bile staining and proliferation of connective tissue about the portal triads.

A number of questions present themselves in connection with these patients. Do their livers still contain the living virus, and, if so, will a slow, progressive necrosis of hepatic tissue with nodular regeneration of hepatic cells and increased proliferation of connective tissue ensue? Or will the hepatic lesion heal, leaving the remaining cellular structure vulnerable to deficient diets and hepatoxic substances and infectious processes? The studies of Lucke'[20], Roholm and Iversen[21] and of Dible and his associates[22] have clearly defined the residual pathologic lesions of infectious hepatitis, which may be minor or in some instances of considerable magnitude. Polack's observations, recorded long before the present epidemic, indicate that functional disturbances at least may persist for years[23]. The most recent report, that of Klatskin and Rappaport[24], indicates that there may be detectable residues in approximately half the patients who have previously had epidemic hepatitis.

20. Lucke', B.: The Structure of the Liver after Recovery from Epidemic Hepatitis, Am. J. Path. 20:595-619 (May) 1944.
21. Roholm K. and Iversen, P.: Changes in the Liver in Acute Epidemic Hepatitis (Catarrhal Jaundice) Based on 38 Aspiration Biopsies, Acta path. et microbiol. Scandinav. 16: 427-442, 1939.
22. Dible, J. H., McMichael, John and Sherlock, S. P. V.: Pathology of Acute Hepatitis: Aspiration Biopsy Studies of Epidemic, Arsenotherapy and Serum Jaundice, Lancet 2:402-408 (Oct. 2) 1943.
23. Polack, E.: Chronic Hepatitis in Young Persons, with or without Intermittent Jaundice, Acta med. Scandinav. 93: 614-621, 1938.
24. Klatskin, G. and Rappaport, E. M.: Late Residuals in Presumably Cured Acute Infectious Hepatitis, Ann. Int. Med. 26:13-26 (Jan.) 1947.

In my opinion, physicians would do well to be on the lookout for three types of patients of the category mentioned previously. First is the patient who has not completely regained his health following an attack of viral hepatitis and whose weight and strength remain below their usual level. These patients should be examined frequently for signs of hepatic or splenic enlargement, nevi araneosi, palmar erythema, macrocytic anemia, and other hepatic functional and nutritional disturbances. When possible, hepatic functional studies should be done serially, and it should be remembered that a negative reaction at one time does not necessarily preclude a positive reaction in the ensuing months. The careful studies of Neefe[25] and Neefe and Reinhold[26] on human volunteers infected with hepatitis virus indicate that two types of tests should be employed: (1) those dependent on disturbances of excretory function of the liver (bromsulfalein, urine bilirubin, and serum urobilinogen), and (2) those dependent on alterations of the plasma proteins (flocculation tests). These may not necessarily run a parallel course—hence the need for more than one type of test.

A second group of patients deserving of more general attention are those who have very chronic jaundice of the type designated as "cholangeitic cirrhosis" by Watson and Hoffbauer[27]. Since their conception of the syndrome has been published only recently, it may be wise to restate it here. They regard this variety of cirrhosis as one which is characterized by the phenomena of regurgitation jaundice (hyperbilirubinemia, hypercholesteremia, and hyperphosphatasemia), with the metabolic functions of the liver generally well preserved. The pathologic changes described range from minimal changes in the cholangioles to nodular cirrhosis. They have described cases in which the pathologic lesions were shown to progress in this manner over a period of years. The relation of this group to so-called hypertrophic biliary cirrhosis on the one hand and

25. Neefe, J. R.: Results of Hepatic Tests in Chronic Hepatitis without Jaundice, Gastroenterol. 7:1-19 (July) 1946.
26. Neefe, J. R. and Reinhold, J. G.: Laboratory Aids in the Diagnosis and Management of Infectious (Epidemic) Hepatitis: Analysis of Results Obtained by Studies on 34 Volunteers during the Early and Convalescent Stages of Induced Hepatitis, Gastroenterol. 7:393-413 (Oct.) 1946.
27. Watson, C. J. and Hoffbauer, F. W.: The Problem of Prolonged Hepatitis with Particular Reference to the Cholangiolitic Type and to the Development of Cholangiolitic Cirrhosis of the Liver, Ann. Int. Med. 25:195-227 (Aug.) 1946.

to an earlier viral hepatitis on the other hand urgently needs further clarification.

Still a third group remains, in which the problem is not so much that of continued observation as a general revision of our ideas concerning the nature of the disease. This group is composed of patients who have the clinical pictures of cirrhosis and who give an antecedent history of syphilis and antisyphilitic treatment. In any large group of cases of cirrhosis, a syphilitic background is mentioned in 12 to 25 per cent of the cases. It should be said parenthetically that gummas of the liver have been excluded from these series of cases and also that no improvement in the clinical state of the patients in question followed the use of mercury and iodides. Neither could evidence of chronic arsenical poisoning as such be detected. In Baldridge's often quoted report[28], 12 out of 36 cirrhotic patients had previously received antisyphilitic treatment. In no instance had there been clinical evidence of hepatic disease before treatment was begun, and Baldridge properly argued that treatment was probably responsible in whole or in part for the development of cirrhosis.

What is the nature of the hepatic lesion in this group of cases? It is probably not due to syphilis *per se*, histologic proof at least being completely lacking. It is difficult to attribute the condition to arsenical poisoning except in acute cases. One turns to the experience of certain British venereal clinics during the recent epidemic of viral hepatitis[29] for an explanation. It was there demonstrated that the time interval between the beginning of treatment and the appearance of the so-called late arsphenamine jaundice corresponded to the incubation period (sixty to one hundred and twenty days) of homologous serum jaundice. It was further demonstrated that, when a rigid aseptic technique was established and a separate syringe was used for each patient to avoid any possible transmission of minute quantities of one patient's serum to another, "arsphenamine jaundice" practically disappeared. This is, of course, circumstantial evidence, but it at least indicates two possibilities: (1) that hepatitis of the virus type may be propagated by contaminated syringes in a syphilis treatment center, and (2) that later developments in the nature of chronic atrophy and fibrosis of the liver may be the residues of an artificially transmitted hepatitis. Such residues have been actually demonstrated by aspiration biopsy.

In view of the paragraphs immediately preceding, it seems clear that some space in our etiologic concepts of cirrhosis will have to be allotted to nutritional hepatic injury, alone or in combination with hepatotoxins, and that full consideration must be given to the possibility that viral hepatitis may lay the groundwork for cirrhosis in certain cases, if it does not actually cause it.

Some Physiologic Considerations of Certain Symptoms and Signs in Cases of Cirrhosis

Endocrine disturbances

Within recent years a good deal of attention has been paid to certain biologic aspects of cirrhosis. Among the more recent contributions are those which pertain to associated endocrine disturbances. These may be of more importance than was at first believed, as witness the previously mentioned phenomenon of a rapidly progressive form of cirrhosis which appears in women past the menopause. The observations of Biskind and Biskind[30] on the role of the liver in inactivating estrogens are of interest in this connection, although they obviously do not explain the mechanism of this particular variety of cirrhosis. By placing pellets of either estrogenic or androgenic substances in the spleens of castrated rats, Biskind and Biskind showed that the liver could inactivate these substances completely. If the spleen containing a pellet of an estrogenic substance was transplanted away from the portal venous bed in the castrated animals, the usual estrogenic effect was manifested. In animals with hepatic damage produced by dietary deficiency an exactly similar effect could be produced, even though the pellet-containing spleens were left *in situ;* under

28. Baldridge, C. W.: The Relationship between Antisyphilitic Treatment and Toxic Cirrhosis, Am. J. M. Sc. 188:685-690 (Nov.) 1934.

29. (a) Bigger, J. W.: Jaundice in Syphilities under Treatment: Possible Transmission of a Virus, Lancet 1: 457-458 (April 10) 1943.
(b) Darmady, E. M. and Hardwick, C.: Syringe-Transmitted Hepatitis, Lancet 2:106 (July 28) 1945.
(c) Sheehan, H. L.: Epidemiology of Infective Hepatitis, Lancet 2:8-11 (July 1) 1944.
(d) Special Articles: Role of Syringes in Transmission of Jaundice: Memorandum by Medical Officers of Ministry of Health, Lancet 2:116-119 (July 28) 1945.

30. Biskind, M. S. and Biskind, G. R.: (a) Diminution in Ability of the Liver to Inactivate Estrone in Vitamin B Complex Deficiency, Science, n.s. 94:462 (Nov. 14) 1941; (b) Effect of Vitamin B Complex Deficiency on Inactivation of Estrone in the Liver, Endocrinology 31:109-114 (July) 1942.

such circumstances the liver apparently lost its power of inactivating the estrogens, and estrus appeared. Inactivation of androgens appears to be less affected by hepatic damage or deficiency of the vitamin-B complex.

The failure of the liver to inactivate estrogens in cases of cirrhosis is clinically demonstrable in certain male patients who present what has been called the Silvestrini-Corda syndrome—lack of bodily hair, eunuchoid build, loss of libido, sterility, testicular atrophy, and gynecomastia. In such patients, Edmondson, Glass and Soll[31] have demonstrated an excessive excretion of total estrogen in the urine, while increased free estrogens were found in some patients with acute hepatic damage who presented similar findings.

Another interesting aspect of the failure of the injured liver to inactive estrogens has been described by Salter[32], who noted gynecomastia in a group of malnourished prisoners of war. Without referring to the details of his report, it seems clear that functional incapacity of the liver in respect to the suppression of estrogenic activity is responsible. Biskind and Biskind[30], in their studies on rats, had shown that even brief periods of thiamine-deprivation were sufficient to allow estrogens to pass the normal hepatic barrier. With an improved diet and presumable improvement in hepatic function, Salter's patients recovered without any permanent residue.

An even more interesting clinical aspect of the estrogenic effect may be seen in connection with those valuable signs of hepatic disease, palmar erythema and nevi araneosi (spiders). It is known that the nevi are in reality small arteriovenous aneurysms, the arterial component of which has about the same histologic structure as the coiled spiral arteries of the endometrium. Bean[33] has demonstrated that these nevi are related to the retention of estrogens and other steroids. They may increase in size and new ones may form when estrogens (stilbestrol, alpha estradiol dipropionate) are given to patients who have cirrhosis. These nevi may appear in the course of prolonged viral hepatitis and disappear as improvement takes place. There is good circumstantial evidence, at least, for regarding the nevi, and the palmar erythema which usually accompanies them, as by-products of excessive or abnormal estrogenic activity which would ordinarily be suppressed by the liver.

As will appear in later paragraphs, there are other fields in which the capacity of the liver to inactivate normally occurring hormones is in question.

The mechanism of ascites

The commonest single finding leading to the diagnosis of cirrhosis is probably the distention of the abdomen with fluid. The question of how and why ascites forms has been the cause of speculation for more than a century. Portal obstruction and venous stasis were formerly held responsible. In cases of late cirrhosis portal hypertension undoubtedly exists[34], but in cases of acute or early cirrhosis this explanation is hardly tenable. Within recent years changes in the plasma proteins associated with cirrhosis have been studied, and the well-known phenomenon of reversed albumin-globulin ratio has been demonstrated. This finding has led to the belief that the level of albumin, which closely parallels the osmotic pressure, is the principal controlling factor in ascites. Butt, Keys and I[35], however, were unable to correlate observed levels of osmotic pressure in cases of cirrhosis with the presence or absence of ascites, and we found a considerable degree of overlapping in the recorded osmotic pressures of patients who did not have ascites and those who did.

Ralli and her associates[36] studied the matter further and have demonstrated that, among patients whose ascites disappeared under treatment, constant osmotic pressures as well as unchanged figures for serum albumin were observed over a period of months. From this observation they reasoned that factors other than those men-

31. Edmondson, H. A., Glass, S. J. and Soll, S. N.: Gynecomastia Associated with Cirrhosis of the Liver, Proc. Soc. Exper. Biol. & Med. 42:97-99 (Oct.) 1939.
32. Salter, W.: Gynecomastia in Prisoners of War, unpublished data.
33. Bean, W. B.: (a) A Note on the Development of Cutaneous Arterial "Spiders" and Palmar Erythema in Persons with Liver Disease and Their Development Following the Administration of Estrogens, Am. J. M. Sc. 204:251-253 (Aug.) 1942; (b) Acquired Palmar Erythema and Cutaneous Vascular "Spiders," Am. Heart J. 25:463-477 (April) 1943; (c) Cutaneous Arterial Spider; Survey, Medicine 24:243-331 (Sept.) 1945.
34. Thompson, W. P., Caughey, J. L., Whipple, A. O. and Rousselot, L. M.: Splenic Vein Pressure in Congestive Splenomegaly (Banti's Syndrome), J. Clin. Investigation 16:571-572 (July) 1937.
35. Butt, H. R., Snell, A. M. and Keys, Ancel: Plasma Protein in Hepatic Disease; a Study of the Colloid Osmotic Pressure of Blood Serum and of Ascitic Fluid in Various Diseases of the Liver, Arch. Int. Med. 63:143-155 (Jan.) 1939.
36. Ralli, E. P., Robson, J. S., Clarke, D. and Hoagland, C. L.: Factors Influencing Ascites in Patients with Cirrhosis of the Liver, J. Clin. Investigation 24:316-325 (May) 1945.

tioned earlier in this section of the paper might be involved in retention of water, and they turned to the assay of urine for possible antidiuretic factors. It was found that, when the urine of patients who had ascites was administered to rats, it delayed urinary excretion, while the urine of cirrhotic patients who had never had ascites possessed normal antidiuretic properties. Patients who had previously had ascites but who were free from it at the time of examination occupied an intermediate position in respect to antidiuretic activity. The nature and the source of the antidiuretic substance remain unknown; it is conceivably a product of the hypophysis (pitressin ?), and may well represent another hormonal substance normally inactivated by the liver.

Such an explanation would fit very well with the observation of Labby and Hoagland[37] on alterations of body fluids during the course of acute infectious hepatitis. They found a diminished excretion of water during the acute stages of the disease and an increase of interstitial fluid volume and chloride retention. As the patient improved, excretion of water reached about double its previous level, and the body stores of water diminished. The excretion of urinary chloride increased comparably, and a free diuresis and a fall of body weight took place. It would be difficult to explain changes of the magnitude described on the basis of alteration of plasma proteins or osmotic pressure. The explanation of temporarily unchecked antidiuretic activity is far more in accord with the facts.

No method of applying this information to the field of clinical treatment has appeared as yet.

Treatment of Cirrhosis

It is now the usual practice to treat chronic hepatic disease much as if it were a form of deficiency state. The reasons for this practice are twofold: first, the contribution of nutritional disturbances to the genesis of hepatic cirrhosis is well established; and second, as the disease progresses, it takes on many of the aspects of a multiple deficiency disease. The failure of the damaged liver to carry out the intermediary metabolism of many products necessary for the maintenance of body economy undoubtedly explains this latter situation.

Diet

Patek[38] in 1936 began the treatment of a group of patients who had alcoholic cirrhosis with a highly nutritious diet and large amounts of vitamin-B complex. The results, which were first reported ten years ago, were most encouraging, and have since been confirmed by investigators in many parts of the country. Details of the diets now in use have been modified according to the preference of the investigator. The original Patek diet contained 365 Gm. of carbohydrate, 139 Gm. of protein, and 175 Gm. of fat; it was made up largely of meat, milk, eggs, fruit and green vegetables, and was heavily supplemented with brewers' yeast, thiamine hydrochloride, and injectable liver extract. At the Mayo Clinic a somewhat similar diet containing approximately 500 Gm. of carbohydrate, 110 Gm. of protein and 60 Gm. of fat, has been employed.

These diets have been modified by many workers, but the ultimate results reported are essentially the same. It seems fair, therefore, to assume that the essentials of the program are an adequate and palatable diet rich in carbohydrate and protein and heavily supplemented by natural and artificial sources of the vitamin-B complex, notably yeast and liver. The tendency has been toward liberalization of the diet and the rather generous use of fat, previously considered as harmful.

Recent studies from the Rockefeller Institute[39] have in fact shown that patients who have infectious hepatitis do better on a liberal fat intake than those receiving only minimal quantities. The fat allowed was chiefly that contained in milk, butter and eggs, or in boiled or baked animal protein.

Supplementary measures

Among supplementary measures used in the treatment of chronic hepatic disease are the lipotropic agents, methionine and choline. They appear not to exercise any particular influence in the course of infectious hepatitis. Neither is there satisfactory evi-

37. Labby, D. H. and Hoagland, C. L.: Alterations in Body Fluids during Acute Infectious Hepatitis, Proc. Soc. Exper. Biol. & Med. 63:110-114 (Oct.) 1946.

38. Patek, A. J., Jr.: Treatment of Alcoholic Cirrhosis of Liver with High Vitamin Therapy, Proc. Soc. Exper. Biol. & Med. 37:329-330 (Nov.) 1937.

39. Hoagland, C. L., Labby, D. H., Kunkel, H. G. and Shank, R. E.: An Analysis of the Effect of Fat in the Diet on Recovery in Infectious Hepatitis, Am. J. Pub. Health 36: 1287-1293 (Nov.) 1946.

dence to indicate that their use is necessary in certain of the more chronic forms of hepatic disease. There may be some advantage in using these substances in treating the large and presumably fatty livers of alcoholic patients[40], and there are some reports to suggest their value in severe degrees of hepatic insufficiency[41]. Choline is readily obtainable and may be used orally in doses of 4 to 6 Gm. daily[42]. Methionine in the pure form is at present difficult to obtain, but it occurs in satisfactory concentrations in many casein hydrolysates. Further study will be required to establish the place of these lipotropic agents in treatment.

The use of liver extract as a supplement to the diet of cirrhotic patients has been mentioned. There is little evidence that enough is absorbed or utilized when taken by mouth to affect the macrocytic anemia of hepatic disease; its parenteral use has been only slightly more encouraging. Recently a preparation of liver extract especially developed for intravenous administration has been used at the Rockefeller Institute. It has been employed in cases of chronic hepatitis and cirrhosis, the usual practice being to give gradually increasing doses at one-day intervals, until a maximal dose of 10 cc. is reached. This amount may be continued two or three times weekly for an indefinite period. General experience with this material has been small, but recent observations[43] seem to encourage its further use. My personal experience with it has not been sufficient to warrant an opinion.

The low levels of serum albumin in cases of cirrhosis, and the resulting decrease of the osmotic pressure of cirrhotic plasma have induced many clinical investigators to give various substances parenterally in the hope of altering or controlling the transudation of peritoneal fluid. Solution of acacia and ascitic fluid have failed to achieve any spectacular effects; plasma itself in large doses has been helpful only temporarily, as is the case with whole blood. With the development of salt-poor concentrated human serum albumin, better results were naturally expected; unfortunately, however, little of the material has been available except for investigative purposes. By using large doses the Rockefeller group have produced copious diuresis and relief of ascites in some cases, and have been able to maintain serum albumin at a nearly normal level[44].

Thorn and his associates[45] have provided more detailed information in regard to the use of albumin in their recent report. Its use in single or multiple doses of 50 Gm. produced striking increases of urinary volume and a satisfactory increase of serum albumin in cases of cirrhosis. The loss of weight was less than expected. The treated subject retained considerable quantities of albumin; there were only small losses in the urine, and a slow equilibrium was attained between ascitic and plasma levels of albumin. Thorn and his associates recommend the use of albumin in cases of severe cirrhosis, in which the patient cannot maintain a positive nitrogen balance and increase his serum albumin on dietary treatment alone, and in cases of long-continued hepatitis, in which anorexia interferes with a normal dietary intake and a positive nitrogen balance cannot therefore be attained. These encouraging reports should stimulate a further clinical use of albumin when it becomes more generally available.

The other accessory therapeutic measures which have been suggested will not be discussed here; it suffices to say with the Rockefeller investigators[43] that adjuvant therapy of the most diverse types may be employed, and that any measure which may relieve one or more of the metabolic defects arising in the complicated picture of hepatic insufficiency should be employed in treatment.

Results of Treatment

Space does not permit a detailed discussion of the available figures covering results of treatment, but, in general, the results have by far exceeded expectations. Patients who had proved cirrhosis now have carried on successfully for as long as eight years. The mortality rate from the disease during the first year after the appearance of ascites continues to be high, but it is still vastly less in

40. Beams, A. J.: The Treatment of Cirrhosis of the Liver with Choline and Cystine, J.A.M.A. 130:190-194 (Jan. 26) 1946.
41. MacCallum, F. O.: Homologous Serum Hepatitis, Proc. Roy. Soc. Med. 39:655-657 (Aug.) 1946.
42. Russakoff, A. H. and Blumberg, H.: Choline as an Adjuvant to the Dietary Therapy of Cirrhosis of the Liver, Ann. Int. Med. 21:848-862 (Nov.) 1944.
43. Hoagland, C. L., Kunkel, H. G., Labby, D. H. and Shank, R. E.: Therapy of Infectious Hepatitis, Bu. Med. News Letter 7:8-13 (May 24) 1946.
44. Labby, D.: Personal communication to the author.
45. Thorn, G. W., Armstrong, S. H., Jr. and Davenport, V. D.: Chemical, Clinical, and Immunological Studies on the Products of Human Plasma Fractionation, XXXI. The Use of Salt-Poor Concentrated Human Serum Albumin Solution in the Treatment of Hepatic Cirrhosis, J. Clin. Investigation 25:304-323 (May) 1946.

the treated group than in control groups. Patek[46] reported that 45 per cent of his patients have survived for two years, and Fleming and I[47] have a substantial group of cases of arrested cirrhosis in which the survival period was more than two years. A few cases have been recorded in which loss of ascites, edema and jaundice has occurred several times as a result of dietary treatment. As Patek has noted, these successive responses in the same patient "give added significance and dignity to the cause of dietetic therapy."

Because the disease affects principally persons in the older age groups and also because of the unpredictable behavior of the alcoholic patients who make up a sizable proportion of the group under consideration, the long-range prognosis is not particularly good. It is an extremely difficult matter to make many of these patients follow the prescribed diet, and the sicker patients require the best of nursing and dietetic care. With patience and persistence, however, much may be accomplished. It is obvious that, as a rule, the disease is detected only in its latest stages and that much earlier diagnosis will be required if the current figures of mortality and morbidity are to be greatly improved[46]. The groups in which dietetic treatment can perhaps be employed to best advantage are the younger alcoholic patients whose portal circulation has not been too greatly reduced by periportal fibrosis, those rare patients who may be suffering from a purely nutritional type of injury, and those who are suffering from the residues of previous infectious hepatitis. Greater familiarity with the less obvious signs of hepatic injury, more general use of the various hepatic functional tests, and a high index of suspicion in regard to the residual hepatic damage produced by other illnesses may be expected to reduce greatly the mortality and morbidity of the more chronic forms of hepatic disease.

46. Patek, A. J., Jr.: Dietary Treatment of Laennec's Cirrhosis with Special Reference to Early Stages of the Disease, Bull. New York Acad. Med., s. 2, 19:498-506 (July) 1943.
47. Fleming, R. G. and Snell, A. M.: Portal Cirrhosis with Ascites: an Analysis of 200 Cases with Special Reference to Prognosis and Treatment, Am. J. Digest. Dis. 9:115-120 (April) 1942.

To paraphrase Winston Churchill's comment on English socialism, the American people under free and democratic medicine have shared somewhat unequally in the best medical service in the world; under socialized medicine they would share equally in the worst.—B. R. Kirklin: The Outlook for Postwar Medicine as Seen by a Radiologist, Minnesota Med. 29:897 (Sept.) 1946.

PERITENDINITIS OF THE EXTENSOR POLLICIS BREVIS AND ABDUCTOR POLLICIS LONGUS TENDONS— De QUERVAIN'S DISEASE

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In 1895, De Quervain[1] described a painful affection of the extensor pollicis brevis and abductor pollicis longus tendons at the radial styloid region of the wrist. He attributed the symptoms to a post-traumatic stenosing tenosynovitis. Although De Quervain's article was apparently the first to appear in the literature, the following passage appeared in the thirteenth edition of Gray's ANATOMY, published in 1893[2]: "The tendons of the extensor muscles of the thumb are liable to become strained and the sheath inflamed, after excessive exercise, producing a sausage-shaped swelling along the course of the tendon, and giving rise to a crackling sensation to the finger."

In the few articles on this subject that have appeared in the literature[3], the consensus of opinion has been that a stenosing tenosynovitis is the primary pathologic pro-

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1. De Quervain, H.: Ueber eine Form von chronischer Tendovaginitis, Cor.-Bl. f. schweiz. Aerzte, Basel, 25:389-394, 1895.
2. Gray, Henry: Anatomy, Descriptive and Surgical, ed. 13, Philadelphia, Lea Bros. & Co., 1893.
3. (a) Brown, W. M.: Stenosing Tendovaginitis at the Radial Styloid; Brief Review of Some of the Literature with Report of a Case, Brit. M. J. 2:538-539 (Sept. 21) 1935.
(b) Burns, B. H., and Ellis, V. H.: Stenosing Tendovaginitis at the Radial Styloid Process, Lancet 1:717-718 (March 28) 1936.
(c) Compere, E. L.: Bilateral Snapping Thumbs, Ann. Surg. 97:773-777 (May) 1933.
(d) Finkelstein, H.: Stenosing Tendovaginitis at Radial Styloid Process, J. Bone & Joint Surg. 12:509-540 (July) 1930.
(e) Hoffmann, P.: Stenosing Tendovaginitis at Radial Styloid Process, J. Bone & Joint Surg. 13:89-90 (Jan.) 1931.
(f) Patterson, D. C.: De Quervain's Disease: Stenosing Tendovaginitis at the Radial Styloid, New England J. Med. 214:101-103 (Jan. 16) 1936.
(g) Patterson, D. C., and Jones, E. K.: De Quervain's Disease; Stenosing Tendovaginitis at Radial Styloid, Am. J. Surg. 67:296-301 (Feb.) 1945.
(h) Potter, P. C.: Stenosing Tendovaginitis at Radial Styloid (DeQuervain's Disease), Ann. Surg. 117:290-296 (Feb.) 1943.
(i) Schneider, C. C.: Stenosing Fibrous Tendovaginitis over Radial Styloid (De Quervain), Surg., Gynec., & Obst. 46:846-850 (June) 1928.
(j) Watkins, J. T., and Pitkin, H. C.: Stenosing Tendovaginitis of De Quervain; Report of a Case, California and West. Med. 32: 101-102 (Feb.) 1930.
(k) Wood, C. F.: Stenosing Tendovaginitis at Radial Styloid Process, South. Surgeon, 10:105-110 (Feb.) 1941.
(l) Zelle, O. L., and Schnepp, K. H.: Snapping Thumb: Tendovaginitis Stenosans, Am. J. Surg. 33:321-322 (Aug.) 1936.

cess. This concept is not in exact accord with the findings observed in those cases seen at Duke Hospital. The observations made here indicate that the primary pathologic process is a hypertrophic traumatic peritendinitis of the extensor pollicis brevis and abductor pollicis longus tendons, and that the symptoms arise from the attempted to-and-fro movement of the inflamed and swollen tendons beneath the overlying normal dorsal carpal ligament.

Anatomy

The dorsal carpal ligament crosses the dorsum of the wrist in a transverse and slightly oblique direction. It extends from the lateral aspect of the distal end of the radius and its styloid process medially and proximally to the ulna and ulnar border of the carpus. Septal processes originating on its undersurface extend downward and insert on the radius and ulna, thus forming separate osteo-fascial tunnels for the extensor tendons and their synovial sheaths. The most lateral of these compartments contains the extensor pollicis brevis and abductor pollicis longus tendons and their common sheath. The extensor tendon is the more superficial of the two, forming the lateral border of the anatomic snuff-box; the abductor longus tendon is deep and volar to it. Their common sheath invests these tendons for a distance from one inch above the proximal border of the dorsal carpal ligament to one inch below the distal border of the ligament. The ligament transects the tendons, and, because of its inelasticity, does not yield to any enlargement of the tendons as it attempts to pass under the ligament in either direction.

Mechanism of Injury

The tendons are tautened to their fullest extent when the thumb is in the position of maximum opposition. When, in addition, the hand is placed in the position of ulnar deviation, the tendons are overstretched and impinged over the prominence of the radial styloid. When the tendons are tautened in forceful extension and abduction of the thumb, they strain laterally against the confining dorsal carpal ligament, and may produce sufficient friction to cause an inflammatory reaction. The pain is readily demonstrated by forcible ulnar deviation of the

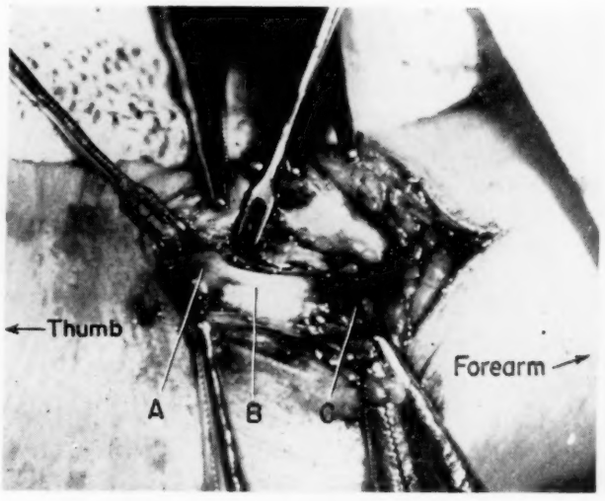

Fig. 1. Photograph showing the exposed extensor pollicis brevis and abductor pollicis longus tendons, with the incised dorsal carpal ligament and the common tendon sheath retracted. A indicates the distal peritendinous enlargement; C, the proximal peritendinous enlargement; and B, the intervening section of uninvolved tendon which the dorsal carpal ligament overlies.

hand with the flexed, adducted thumb grasped tightly in the other four fingers, and is relieved when the thumb is released, despite maintained ulnar deviation of the wrist. The production and relief of excruciating pain by this maneuver are considered a pathognomonic sign of De Quervain's disease. The pain thus produced is accounted for by the fact that the area of peritendinitis proximal to the dorsal carpal ligament is drawn against the unyielding proximal border of the ligament. Another test, which elicits the same pain, involves forceful extension of the thumb. This draws the area of peritendinitis distal to the dorsal carpal ligament against the distal border of the ligament.

Pathogenesis

An inflammatory reaction can be set up by either of these two mechanisms, involving those portions of the tendons immediately proximal and distal to the dorsal carpal ligament. The inflammatory reaction usually comes on insidiously as the result of prolonged, repeated, or strenuous use of the thumb and wrist. It may come on abruptly, however, as the result of sudden injury. The acute phase may subside without any residual disability, but, as a rule, peritendinous hyperplasia and fibrosis develop, and the symptoms persist despite prolonged and heroic conservative therapy. The hyper-

plasia and fibrosis result in cone-shaped enlargements of the peritenon proximal and distal to the dorsal carpal ligament, the bases of the cones being adjacent to the margins of the ligament. These enlargements produce a disparity between the circumference of the tendons and the caliber of the intervening osteo-fascial tunnel. Thus any motion entailing forceful flexion or extension of the thumb will tend to force one of these enlargements against the unyielding dorsal carpal ligament, and will induce pain.

The majority of the cases reported in the literature occurred in women as the result of domestic or occupational tasks requiring repetitive movements of the wrist in ulnar deviation with the thumb fixed in opposition. Early in the century, the syndrome was known as "washerwoman's strain" because of the frequency of cases occurring after the prolonged wringing of clothes. With the recent influx of women in industry there has been an increase in the incidence of De Quervain's disease. This increase has been greatest in the textile industries and hosiery districts.

Symptoms

Pain over the radial styloid which may extend a few centimeters up the forearm and down along the dorsum of the thumb is the outstanding symptom. The patient frequently remarks about the paradoxical nature of the pain. Certain gross, forceful movements of the hand may be executed painlessly, whereas other minor movements of the hand, such as those involved in pouring water from a pitcher or lifting a cup to drink, are excruciatingly painful. Analysis of these latter movements makes the cause of the pain obvious.

There is tenderness to pressure over the involved areas of the tendons, and frequently the anatomic snuff-box is obliterated by the distal enlargement.

Diagnosis

The diagnosis is relatively simple if one is aware of the condition and its pathogenesis. Arthritis, wrist sprain, ganglion, periostitis, tuberculous tenosynovitis, and neuritis are some of the most frequent erroneous diagnoses.

Treatment

Surgery is the treatment of choice. It consists in section of the dorsal carpal ligament where it overlies the involved tendons. It is best done under local anesthesia, and is uniformly successful. No immobilization is necessary, and active motion may be resumed immediately.

Summary

De Quervain's disease is a hypertrophic traumatic peritendinitis of the extensor pollicis brevis and abductor pollicis longus tendons proximal and distal to the dorsal carpal ligament. The diagnosis is simple. Surgery is the treatment of choice.

PRESENT TRENDS IN THE TREATMENT OF SYPHILIS

DAVID G. WELTON, M.D.

CHARLOTTE

The treatment of syphilis has been in a state of flux ever since Ehrlich's introduction of arsphenamine in 1910. The rate of change of the methods in vogue has varied; from Ehrlich's massive "one-injection cure," treatment plans progressed through a number of modifications which employed varying combinations of arsphenamine ("606"), neoarsphenamine, mercury, bismuth, and potassium iodide. Fifteen years ago it was not difficult to present several rather standardized treatment programs for the various stages of syphilis, each program based on the experiences of the cooperative clinical groups. During the past few years, however, with the introduction of mapharsen (oxophenarsine hydrochloride) and the "rapid treatment" regimens, and particularly since the introduction of penicillin, the rate of change in plans of treatment begins to approach the speed of jet-propelled airplanes!

Some people would say, off hand, that one could discuss the subject of this paper with a single word—namely, penicillin. It appears to them that the treatment of syphilis is now very simple; they believe that one has only to give every patient with a positive serologic test an "intensive course of penicillin," and consider the matter closed. The indulgence of this attitude, without a

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careful evaluation of each individual's infection, will lead to serious errors, failures, and treatment tragedies.

It is also true that the questions, "How much penicillin shall I use?", "How often shall I give it?", and "How long a period of time shall I continue its administration?" have not yet been satisfactorily answered. As a matter of fact, the treatment of syphilis today is probably a more confused subject than it has been at any time during the past twenty years. The important *fact* to bear in mind is that the appraisal of penicillin is still going on and must be carried on for at least ten years before the real value of this remedy in the treatment of syphilis will be known.

Experimental Observations

Since penicillin is by far the most promising new therapeutic agent, I should like briefly to review some of the significant research pertaining to its effect on experimental syphilis produced in rabbits. The discovery that penicillin is produced in four or more different species, called—at present—F, G, K, and X, led at once to an evaluation of the effect of each type on various pathogenic micro-organisms[1]. It was soon learned that penicillin G is the most potent destroyer of the Spirochaeta pallida. The comparative spirocheticidal activity of the four species is shown in table 1 (Eagle[2]).

Table 1

The comparative spirocheticidal activity (in vitro) of four species of penicillin (from Eagle[2])

Penicillin type	Average activity (crystalline)*
F	53
G	100
K	76
X	51

* All values have been referred to that of G as 100.

Using sodium penicillin in aqueous solution, Eagle, Magnuson and Fleischman[3] then demonstrated that in the treatment of syphilitic rabbits (1) the total curative dose of penicillin was inversely proportionate to the *number* of injections (fig. 1); (2) the *interval* between injections also had an influence on the total curative dose (fig. 2); and (3) "low concentrations of penicillin acting over a long period of time (i.e. many small injections) were more effective than high concentrations acting over a short period (i.e. a few large injections to the same total dose)."[3]

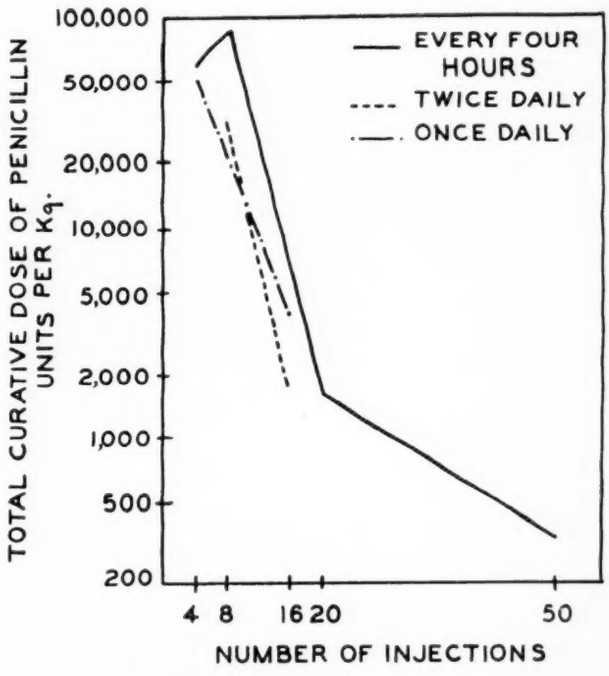

Fig. 1. The units of the abscissa represent the number of injections. This graph demonstrates that the total amount of penicillin required to bring about a cure can be decreased simply by using a greater number of injections. (From Eagle, Magnuson, & Fleischman[3])

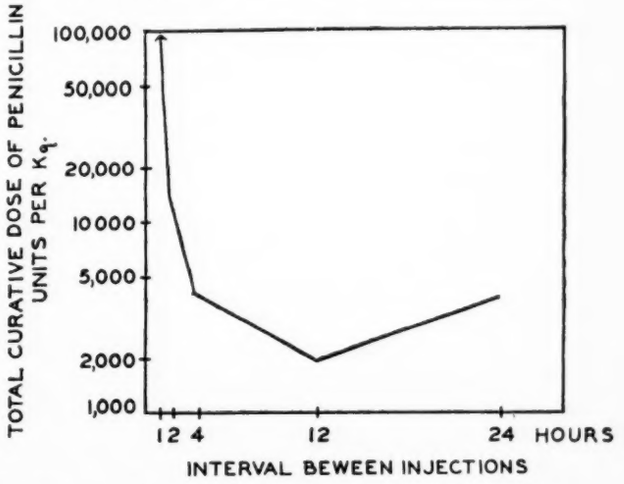

Fig. 2. The units of the abscissa represent the number of hours between injections (with a fixed total number of injections). A twelve-hour interval brought about cure with the smallest amount of penicillin. (From Eagle, Magnuson, & Fleischman[3])

1. Reynolds, F. W., and Moore, J. E.: Syphilis: A Review of the Recent Literature, Arch. Int. Med. 78:733-769 (Dec.) 1946.
2. Eagle, H.: Relative Activity of Penicillins F, G, K, and X against Spirochetes and Streptococci in vitro, J. Bacteriol. 52:81-88 (July) 1946.
3. Eagle, H., Magnuson, H. J., and Fleischman, R.: The Effect of the Method of Administration on the Therapeutic Efficacy of Sodium Penicillin in Experimental Syphilis, Bull. Johns Hopkins Hosp. 79:168-189 (Aug.) 1946.

Eagle and his group concluded that the mode of action of penicillin differs in several respects from that of arsenicals. When mapharsen, for example, is injected into the blood, it is supposedly bound by the organisms in competition with the tissues in a relatively short time, so that a single exposure to a very high concentration of the arsenical apparently kills as many organisms as repeated exposures to small concentrations. On that basis, the curative dose of mapharsen in a patient with syphilis is essentially the same, whether the drug is given in a single massive injection or in a number of smaller injections over a long period of time. The therapeutic efficacy of penicillin, on the other hand, is greatly *increased* merely by subdividing the treatment into a large number of injections. These investigators believe that the essential difference is that penicillin is not bound and concentrated by the organisms, so that "its action depends on the *length of time* for which effectively spirocheticidal levels are maintained in the body fluids. It is this introduction of the time factor, the necessity for maintaining an effective level, which primarily distinguishes the kinetics of the spirocheticidal action of penicillin from that of e.g. mapharsen."[3]

There appear to be, then, two main factors governing the therapeutic efficacy of penicillin in syphilis: first, its concentration in the body fluids; second, the period of time during which the organisms are exposed to an effective concentration. Many investigators now believe that the second of these factors is the more important. This belief led Romansky and Rittman[4] to search for a vehicle for penicillin which would delay its absorption and thereby maintain an effective blood level for a longer period of time.

Another question frequently asked is: "Will the spirochete develop penicillin-resistant strains?" Tung and Frazier[5] studied this problem with the aid of an electron microscope. Using the Reiter strain of spirochete (an experimental animal strain grown in thioglycollate with the addition of rabbit serum), they found that "this strain did not develop an increased tolerance to penicillin after being subjected to 15 consecutive passages through media containing penicillin." Their spirochetes did show elongation, inhibition of cellular division, and loss of flagella. The final answer to this question must await further study and clinical observation.

In order to compare the spirocheticidal effect of penicillin with that of mapharsen in rabbits and in human beings, Eagle, Magnuson, and Fleischman formulated this ratio: milligram for milligram, penicillin is *two* to *four* times as effective as mapharsen in man, but *ten* to *twenty* times as effective as mapharsen in rabbits. To cure the syphilis, they found that less than one twentieth to one fortieth as much penicillin (per kilogram) is required in rabbits as in human beings. This finding shows that the host factor modifies not only the biology of the infection, but the efficacy of the therapeutic agent.

Many investigators believe there is a true synergistic effect between mapharsen and penicillin, and between bismuth and penicillin. Eagle and his coworkers[6] reported that a *sub*curative dose of penicillin combined with a *sub*curative dose of mapharsen will cure syphilis in rabbits. They stated that as little as one tenth of the curative dose of penicillin, properly distributed in time, kills most of the spirochetes in the infected animal; the *bulk* of the penicillin, therefore, is devoted to the eradication of a small number of relatively virulent organisms. The few organisms which are resistant either to penicillin or to arsenic, and which would survive a subcurative dose of one of these agents, are probably normally susceptible to the other drug, which has a different mode of action. These are killed, then, by the subcurative dose of the second drug. (For example: a subcurative dose of drug A, which kills more than 99 per cent of the organisms, superimposed on a subcurative dose of drug B, which alone would also kill 99 per cent of the organisms, would bring about a biologic sterilization.)

Applying this finding to human syphilis, one would expect that a subcurative amount of penicillin, supplemented (simultaneously)

4. Romansky, M. J., and Rittman, G. E.: Penicillin: Prolonged Action in Beeswax-Peanut Oil Mixtures: Single Injection Treatment of Gonorrhea, Bull. U. S. Army M. Dept. (no. 81) pp. 43-49 (Oct.) 1944.

5. Tung, T., and Frazier, C. N.: Penicillin Sensitivity and Morphology of the Reiter Strain of Treponema Pallidum after Cultivation in Media Containing Penicillin, Am. J. Syph., Gonor. & Ven. Dis. 30:205-210 (May) 1946.

6. Eagle, H., Magnuson, H. J., and Fleischman, R.: Synergistic Action of Penicillin and Mapharsen (Oxophenarsine Hydrochloride) in the Treatment of Experimental Syphilis, J. Ven. Dis. Inform. 27:3-9 (Jan.) 1946.

by a subcurative dose of mapharsen, would result in a lower failure rate than would be obtained by simply increasing the amount of penicillin used. More than two years ago, O'Leary and Kierland, alarmed by the high percentage of failures in early syphilis treated with penicillin alone, amplified their treatment schemes by the addition of arsenoxide and bismuth[7]. The specific amounts of mapharsen and penicillin required to bring about a cure by this method have not yet been established clinically, but preliminary reports indicate that this is a promising approach. Citing the experiences in sixteen rapid treatment centers operated by the U.S. Public Health Service, Heller[8] reported that a treatment schedule employing 1,200,000 units of penicillin, plus five injections of arsenoxide, resulted in a failure rate of 13 per cent (ten months' follow-up). This rate was reduced to 8 per cent by the addition of 600 mg. of bismuth to the above schedule. He stated that the 5-12-3 schedule (5 injections of arsenoxide, totalling 320 mg.; 1.2 million units of penicillin; and 3 injections of bismuth, totalling 600 mg.) gave better results than any other schedule employing penicillin which had been tried up to that time.

Clinical Observations

Enthusiasm about the use of penicillin has become universal; many share the opinion of Pillsbury, who stated that "penicillin therapy is decidedly superior to any previous form of treatment in respect to non-toxicity, completion of therapy within a prescribed period, healing of early lesions, and control of infectiousness. On only one score was penicillin inferior to intensive arsenobismuth therapy, i.e., the incidence of persistent seropositivity six or more months after treatment."[9] The number of clinical reports in the current literature is overwhelming, and one is soon confused and bewildered by trying to find comparative results.

Eagle has pointed out that the main disadvantage in using penicillin is that "you are pouring it more or less into a bucket which has a big hole in the bottom, represented by its rapid rate of excretion."[10] Studies in man have shown that, at the end of the first hour following the injection of an aqueous solution, 70 per cent of penicillin G and X is recoverable in the urine; 85 per cent is recoverable in three hours. The level of penicillin in the blood decreases at the approximate rate of 80 per cent per hour. The use of penicillin in oil and beeswax overcomes this disadvantage more successfully than any other plan to date.

Several investigators have concluded that the use of penicillin in its most advantageous manner may not be able to bring about cures in more than 85 per cent of the cases, because of the limiting factors: (a) variation in the susceptibility of different strains of the spirochete, and (b) variability in the resistance of the patient.

In regard to the interval between injections for hospitalized patients (using an aqueous solution of penicillin G), agreement has not yet been reached as to whether a two-hour interval is better than a three-hour schedule. Mahoney[10] favors a two-hour interval, using 40,000 units per intramuscular injection for a total of 85 injections (3,400,000 units in seven days). His results in 174 cases of early syphilis, followed for six to twelve months, are impressive: only 6 had to be retreated, although it is possible that more failures occurred later. He also noted that it might take a year to achieve seronegativity with this plan. The present routine treatment plan for early syphilis in the rapid treatment centers (U. S. Public Health Service) includes 5 injections of mapharsen, 1,800,000 units of penicillin, given at the rate of 16,666 units every two hours, and 3 injections of bismuth; this plan requires nine days, and according to Wile[10], the results have been very satisfactory for a hospital plan.

Since most of us are interested primarily in treatment plans which may be carried out in the office, let us consider the results reported with the use of penicillin in oil and beeswax ("POB"). The "Romansky formula" is 300,000 units of calcium penicillin in 4.8 per cent by weight of bleached beeswax, contained in 1 cc. of peanut oil. Romansky and Rein's first series included 75 patients

7. O'Leary, P. A., and Kierland, R. R.: Today's Treatment of Syphilis, J.A.M.A. 132:430-434 (Oct. 26) 1946.

8. Heller, J. R., Jr.: Results of Rapid Treatment of Early Syphilis, J.A.M.A. 132:258-263 (Oct. 5) 1946.

9. Pillsbury, D. M.: Penicillin Therapy of Early Syphilis in 14,000 Patients: Follow-Up Examination of 792 Patients Six Months or More After Treatment, Am. J. Syph., Gonor. & Ven. Dis. 30:134-143 (March) 1946, quoted by Reynolds and Moore(1).

10. Symposium on Syphilis, Am. Acad. of Derm. & Syph., Cleveland, Dec. 11, 1946.

with early syphilis who were given one intramuscular injection of this formula daily for eight days (2,400,000 units); of the 60 patients followed, 2 were treatment failures and 2 more became reinfected[11]. Romansky is now advocating one injection (or two, if possible) daily for sixteen days, because their results indicate that the duration of time over which penicillin is administered by this method is more important than the amount of the drug given.

The report of Thomas, Landy, and Cooper describing their results in the treatment of 802 patients with POB at the Rapid Treatment Center, Bellevue Hospital, New York, has just become available[12]. (This is, I believe, the largest series reported to date in this country.) These patients all had early infectious syphilis and were given 600,000 units of POB per day (in one or two injections) for eight days (4,800,000 units). No serious reactions were encountered: 5.1 per cent had pain and induration at the sites of injections only; 9.6 per cent had low-grade fever on the fifth to seventh day, associated with pain and induration at the sites of injections; 1.1 per cent had urticaria accompanied by low-grade fever. Several of the last mentioned group also had angioneurotic edema, lasting not more than five days. The rate of relapses and reinfections ranged from 6.8 per cent in the seronegative primary cases to 15.2 per cent in the secondary group; most of these relapses and reinfections occurred within six months after treatment. It was found that patients were frequently reinfected by sexual partners whom they had previously infected. The group treated with two injections a day did not show better results than those who received only one injection daily.

Romansky has shown that a single injection of calcium POB maintains an effective blood level for at least twenty hours, and continues to be excreted in the urine for as long as three days. He believes that, because of its prolonged action, there is an actual therapeutic advantage in treating syphilis with penicillin in beeswax and oil, rather than in aqueous solutions.

11. Romansky, M. J., and Rein, C. R.: Treatment of Early Syphilis with Calcium Penicillin-Oil-Beeswax, J.A.M.A. 132: 847-851 (Dec. 7) 1946.

12. Thomas, E. W., Landy, S., and Cooper, C.: Rapid Treatment of Early Syphilis with Penicillin in Beeswax and Oil, J. Ven. Dis. Inform. 28:19-23 (Feb.) 1947.

Treatment Plan for Office Use

In the midst of the present confusion about the treatment of syphilis, one should be guided by some of the well established landmarks which have stood the test of time. We do not have as yet, even with penicillin, a method by which we can determine exactly how much treatment any individual will require for a "cure." The intelligent application of any method of treatment to a person infected with syphilis still requires a careful evaluation of that patient's particular needs and of what he can be expected to tolerate. The basic factors in this evaluation have been enumerated by Wile; they are:

1. Age of the patient.
2. Duration of the syphilis.
3. Stage of the infection (type).
4. Presence of other disease.
5. Social and economic status.

These factors are self-explanatory and require no detailed discussion. The patient's age, the duration and stage of his syphilis, and the presence of visceral or central nervous system involvement are guides in determining how intensive a regimen he requires and how he may tolerate it; the presence of some other disease may modify the choice of treatment, and in some cases the "other disease" may be relatively more important at the time than is the syphilis. Social and economic factors should be considered in discussing the whole matter with the patient, with at least two objectives in mind: to render the person non-infectious as soon as possible, and to arrange that treatment will not be such a financial burden that it may not be completed.

One should bear in mind that there is no "time-tested" plan employing penicillin in oil and wax. All available evidence indicates that penicillin should probably be included in any treatment plan for early syphilis; the beeswax and oil preparation is the most suitable for office use. I believe that some mapharsen and some bismuth should be given with it. The following schedule is offered on this basis, and with the reminder that individual modifications should be made when indicated. (The spinal fluid should be examined, in every case, sometime within the first six months.)

Table 2

Treatment Plan Suggested for the Office Treatment of Patients with Early Syphilis

Penicillin in oil and beeswax	One injection (300,000 units) daily for ten days
Mapharsen	One injection (40-60 mg.) every third day for a total of 3, or preferably 6, injections; begun concomitantly with the POB.
Bismuth subsalicylate in oil	One injection every seven days following POB, for a total of 10, or preferably 20, injections.
Serologic follow-up (quantitative)	Once a month for six months; then every three months for one year.

If the serologic titer falls satisfactorily for a while and then starts to rise, it is advisable to repeat the course of penicillin. This schedule is not applicable to all stages of syphilis. In patients with neurosyphilis, for example, adequate "preparation" with bismuth and potassium iodide may avoid a serious reaction; it is sometimes advisable to repeat the penicillin course (which should be longer than the one described above) every three or six months according to the progress of the patient. Fever therapy can often be advantageously combined with penicillin in neurosyphilis, and in some types of congenital syphilis (with interstitial keratitis).[13] Cardiovascular and visceral involvement require careful study and usually respond better to a conservative initiation of therapy by bismuth alone. It is advisable to prepare patients with latent syphilis, who may have no clinically active lesion, with at least six injections of bismuth before starting the penicillin; one may thus avoid a serious Herxheimer reaction which might otherwise be precipitated by the stirring up of an obscure focus.

The pregnant woman with syphilis appears to be an ideal subject for treatment with penicillin. The administration of 2,400,000 units in eight days (as a hospital procedure) during the third month and again during the seventh month has been recommended by O'Leary and Kierland[7], who state that penicillin is more effective in the prevention of congenital syphilis than it is in its treatment. As an office procedure, the schedule proposed in table 2 should be satisfactory in a majority of cases.

13. Reynolds, F. W., and Moore, J. E.: Syphilis: A Review of the Recent Literature, Arch. Int. Med. 79:92-112 (Jan.) 1947.

Treatment Reactions

The Herxheimer reaction is an accentuation of previously existing symptoms, usually accompanied by fever; it may "bring out" a secondary eruption. It is not a contraindication to further treatment in early, uncomplicated syphilis, but it may be serious if it involves the brain, spinal cord, larynx, or other vital organs. Penicillin is just as capable of evoking this reaction as are the arsenicals. Romansky and Rein[11] reported such reactions in 39 per cent of their series; Heller[8] noted an incidence up to 90 per cent.

According to Romansky, specific local and systemic reactions to penicillin in oil and beeswax occur in 5 to 10 per cent of the patients treated. POB is capable of producing a severe local tissue reaction sometimes resembling a sterile abscess. Some observers state that this reaction is an urticarial wheal in the muscle tissue due to an allergic response; they advise treatment with *cold* packs locally and benadryl (or pyribenzamine) systemically. The technique of the injection is important; the following suggestions may be helpful in preventing these reactions: (1) keep the POB at room temperature; (2) be sure that the needle is carried well beyond the subcutaneous layer into muscle tissue; (3) be sure the needle is not in a blood vessel; (4) express *all* of the material through the needle before withdrawing it; (5) do not massage the site of injection.

Allergic manifestations resulting from the administration of penicillin have been summarized by Reynolds and Moore[1] as follows: "(1) urticaria or angioneurotic edema; (2) papular, vesicular, or bullous eruptions, sometimes followed by desquamation; (3) contact dermatitis; (4) an Arthus type of response following repeated sensitivity of the skin, and (6) delayed reactions similar to serum sickness." Morginson has discussed these reactions in detail[14]. It is also known that penicillin may activate a quiescent focus of fungus infection on the hands or feet.

There are several possible sources of allergens in POB: the penicillin fungus, substances used in the preparation of penicillin, possibly "impurities" in the amorphous

14. Morginson, W. J.: Toxic Reactions Accompanying Penicillin Therapy, J.A.M.A. 132:915-919 (Dec. 14) 1946.

preparations, the penicillin itself, the beeswax, and the peanut oil. (Sulzburger[11] pointed out that beeswax may vary considerably in its composition, and may contain at times traces of such allergenic substances as ragweed.)

Crystalline salts of penicillin in oil and beeswax are now commercially available and may be expected to cause considerably fewer allergic reactions. The recommended treatment for these reactions is the prompt use of large amounts of benadryl or pyribenzamine. If the reaction occurs during the use of amorphous penicillin, it is likely that the patient will tolerate the crystalline form[15]; but if the reaction occurs with a crystalline preparation, it is probably advisable to discontinue penicillin.

Summary

Some of the fundamental research concerning the effect of penicillin in the treatment of syphilis, and several significant clinical reports have been summarized. Basic factors in evaluating the patient's treatment needs have been discussed.

Penicillin in oil and beeswax (POB) is the most promising therapeutic agent for the office treatment of syphilis; the synergistic effect of penicillin combined with mapharsen and bismuth may make it possible to achieve a higher percentage of "cures," with fewer reactions, than previously was possible.

A schedule for the office treatment of patients with early syphilis is suggested. The importance of following each patient by means of frequent determinations of the serologic titer for at least one year is emphasized. One should keep in mind Stokes's observation that "from A.D. 1943, it will take a year to guess, two years to intimate, five years to indicate, and a decade or more to know what penicillin does in syphilis."[16]

403 North Tryon St.

15. Barefoot, S. W., and Olansky, S.: Report of a Patient Tolerating Crystalline Penicillin without Reaction after Repeated Reactions to Crude Penicillin, North Carolina M. J. 8:82-83 (Feb.) 1947.
16. Stokes, J. H., Beerman, H., and Ingraham, N. R.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Co., ed. 3, 1945, p. 1256.

Complete victory over tuberculosis is in sight. This is supported by statistics and by the opinion of those who have led the drive for eradication. The death rate continues to decrease. More adequate case finding programs have resulted in a rising percentage of minimal cases and a falling percentage of far-advanced cases.—Ed., Hospitals, Aug., 1946.

HEALTH EDUCATION EXPERIENCE IN THE RUTHERFORD-POLK AREA

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RUTHERFORDTON

Purposes and Methods of Health Education

The purpose of health education, according to Dr. Smillie[1], is "to inform the mass of the people concerning the principles of preventive medicine and public health." In rural health work the educational duties of the health department often encompass much more than this, for in many cases an individual must be made to forsake the habits of a lifetime and acquire new habits before he can secure the benefits of health for himself and his family—and, in some instances, before he will cease to be a menace to the health of his home and his community. The fundamental problem is to carry hygienic knowledge to the individual in his home and in his place of work. This education of the individual must consist not merely in the preaching of abstract ideas, but must result in having him apply definite and specific principles of healthful living.

The most effective method of health education is the concrete demonstration. Definite problems of health work should be undertaken as a means of educating the people in sanitation, personal hygiene, and disease prevention. Experience has shown that such demonstrations are more impressive and lead to more significant results when definite problems of public health are attacked and overcome. Furthermore, the educational work is of most value when there is an almost immediate opportunity of having the precepts put into practice. In public health work, as elsewhere, one definite and concrete example carries more weight and is more convincing than a large number of partly performed undertakings.

The object of health education, then, is to change habits and customs which interfere with the highest physical and mental development of the people. In order to accomplish this object, the people must not only become interested in health matters and be informed

Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Pinehurst, May 3, 1946.

1. Smillie, W. G.: Preventive Medicine and Public Health, New York, The Macmillan Company, 1946.

of the discoveries of modern medicine, but must be taught how the application of our knowledge of hygiene will bring economic as well as physical benefits. The two factors to be considered in such an undertaking are the education of children, our future citizens, and the education of adults, our present citizens.

The school is the place above all others where children should be taught the principles of hygiene and sanitation—principles which are becoming more important from year to year as modern ways of living extend to an ever-increasing proportion of the population. No child should pass through school without learning the essentials of disease prevention.

The ancient adage that an old dog can't be taught new tricks is incorrect when applied to health matters. Adults, the children of yesterday, who went through the schools without being taught those principles of health conservation which should influence them as citizens, are receptive to health measures, just as they are receptive to other innovations of modern life. However, since they are accustomed to old methods of living, which were probably adequate in the past, the advantages of this new regimen must be demonstrated to them before the new practices will be adopted and followed.

Cooperation with Other Groups

With these general principles in mind, it can be stated further that a health department will succeed and expand only to the extent to which it can secure the cooperation of the more intelligent citizens. The health department, with its small staff, can by itself make but slow progress in carrying its program to a county or district. More rapid progress will be made if leading citizens can be impressed with the fact that public health is as much their concern and responsibility as it is the concern of the health department. They should be made to look upon the health department staff as a group of consultants whose duty is to aid them in improving the health conditions of their communities. An effort should be made to interest especially groups of citizens whose vocation or avocation makes them of particular aid in carrying the health program to the general public. The medical profession is such a group, probably the most important; teachers and school authorities are another; and local organizations such as parent-teacher associations and women's clubs are among the other groups that can be of aid.

During the past four years, these policies have been followed by the Rutherford-Polk District Health Department, with satisfactory results. As to cooperation, the following instances may be mentioned:

(1) The health department has enjoyed the support and assistance of the medical profession. Definite programs of work, such as an anemia survey of school children, were discussed at a meeting of the county society; later, reports of findings were made and assistance obtained in the treatment of this widespread condition. In the infantile paralysis epidemic, the society was consulted regarding methods of controlling the spread of this disease. Again, two diphtheria carriers were located, treated, and cured through the cooperation of their family physicians. When defects are found in school children, the parents are advised to consult the family doctor, and much effective treatment has been obtained. At the present time, about half of the doctors placard and quarantine their cases of infectious diseases, and later report them to the health nurse. Such assistance is of great value in influencing the people to cooperate in the control of infections and in vaccination for their prevention.

(2) In the school health program, only a few of the cooperative undertakings can be mentioned. The method, in general, is for the teachers to make a preliminary inspection of the pupils, selecting children whom they believe should have a medical examination; these children are seen later by the health officer and nurses. The teachers also take a leading part in securing the vaccination of preschool children and newcomers, and in arranging for the correction of physical defects which handicap the children. The operation of the lunch rooms is another school activity in which the health department gives assistance, especially since they provide an excellent demonstration in nutrition. Regular inspections are made, and the schools take great pride in improving their standard; already a number of these cafeterias have attained a grade A rating. In the school program, more than in any other, emphasis is placed on the fact that the health

measures undertaken are part of the regular activities of the organization involved, and that the health department gives assistance as a consultant.

(3) Local organizations, such as women's clubs, parent-teacher associations, and other social clubs, are encouraged to undertake programs of community health work. For example, a number of P.T.A.'s have made surveys of their district, with the object of having every child vaccinated against diphtheria and whooping cough; Lion's Clubs are interested in seeing that every person with defective vision is treated; a Kiwanis Club transports crippled children to orthopedic clinics; and various organizations have contributed to a fund for the medical and surgical treatment of underprivileged children.

These examples of cooperation show the possibilities for enlargement of a health department's activities through assistance to local groups in carrying out health programs in which they are interested. It is understood, of course, that the health department must act as a guide in suggesting activities, as well as a consultant in methods of carrying them out.

Special Methods Employed

Finally, an important phase of health education is the employment of methods by which people are made acquainted with health programs and induced to cooperate. While newspaper articles, lectures illustrated with moving pictures, conferences with community leaders, and the other usual methods of health education are employed, mention should be made of a few special methods which have met with success:

(1) A written monthly report is read to the Board of County Commissioners; this is then published in the local newspapers, and through it the general public is acquainted with the activities of their health department.

(2) A letter regarding diphtheria and its prevention is sent to each baby whose birth has been registered, when the baby is six months of age. This letter has appealed to mothers and has been instrumental in having them bring their babies for immunization.

(3) Tonsil operations are performed at our County Hospital, at a greatly reduced rate, at weekly tonsil clinics held for school children. These clinics are organized by the health department, and any school child, regardless of his family's financial standing, is given the operation at the reduced rate. Underprivileged children have the cost of their operation paid from a special fund.

(4) Eye clinics are organized, usually four a year, and financed through cooperation with the Welfare Departments and Lion's Clubs.

(5) In carrying out vaccination campaigns for school children, the objections of parents are best overcome in many instances by showing them that it is of financial advantage to have their children protected.

Results

It may not be out of place to close with a paragraph of statistics which show some of the work accomplished by the Rutherford-Polk District Health Department during 1945. The district, composed of Rutherford and Polk Counties, has an area of 573 square miles and a population of 59,482, of whom about 15 per cent are colored. There are eleven staff members; in Rutherford three public health nurses and two clerks, and in Polk one public health nurse and one clerk give full-time service. The health officer, sanitarian, health educator, and the follow-up officer for venereal disease control spend one third of their time in Polk and the remainder in Rutherford. The budget for the year amounted to $25,525. The department is one of the eleven centers in the United States which has been selected by the University of North Carolina for the training of health educators. The routine program of work carried out includes the control of communicable disease, venereal disease, and tuberculosis; maternity and infancy welfare service; school hygiene; care of crippled children; improvement of sanitation; and protection of food, water, and milk.

Among the results obtained may be mentioned the immunization of 2620 persons for smallpox, 1004 for typhoid fever, 1439 babies for diphtheria, and 531 for whooping cough. No cases of smallpox or typhoid occurred, and there were only 23 cases of diphtheria reported in the two counties. In the fifty-four schools of the district (thirty-two white and twenty-two colored), 3859 pupils were examined by the health officer and nurses, while 1146 had defects corrected in health

department clinics; 586 had dental treatment, 169 had glasses fitted, and 502 had tonsil operations.

Summary

The most effective method of health education is by demonstration; one definite and concrete example carries more weight and is more convincing than a large number of partly performed undertakings. Both children and adults must be reached and taught to apply the principles of hygiene and sanitation in their daily living. Cooperation of leading citizens is essential, and far greater results will be accomplished if these leaders can be induced to take the initiative in carrying out local health programs, while the staff of the health department assist in the capacity of consultants.

BROMIDE INTOXICATION

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Although the literature on bromide poisoning is voluminous, the subject is barely mentioned in some of the recent editions of standard medical textbooks, and is omitted entirely from others. This common medical entity is often overlooked because insufficient consideration is given to it during the didactic period of medical training.

Case Reports

The frequency with which bromide intoxication is overlooked may be emphasized by two brief case summaries taken from charts in the Winston-Salem City Memorial Hospital.

Case 1

A 54-year-old white female was referred to me on July 7, 1946, with the diagnosis of cerebral metastasis from a malignancy of the right breast several years before. She was admitted to the City Memorial Hospital in a state of coma and presented the picture of acidosis, uremia, or a massive cerebral vascular accident. Physical examination was essentially negative, however. The white and red blood cell counts, hemoglobin, blood sugar, and nonprotein nitrogen were within normal limits.

The patient's family stated that she had had a radical mastectomy for cancer of the breast twelve to fifteen years before. However, there seemed to be no possible connection between this condition and her present illness. The patient had been feeling bad for five or six months before admission, and had consulted a physician at the early part of this illness. He told her that she was suffering from nervousness and high blood pressure, and gave her a prescription. She responded reasonably well to the prescribed medication, and on her next visit to the physician she was advised to continue it as long as necessary. She continued to take this medicine for thirteen or fourteen weeks. Four days before her admission to the hospital she became highly excited, unruly, and irrational.

The day after the patient's admission the laboratory reported the blood bromide level to be 210 mg. per 100 cc. A diagnosis of bromide poisoning was made, and saline therapy was started immediately. Thirty-six hours after admission the patient began to show signs of consciousness. Four days after admission the blood bromide level was 118 mg. per 100 cc., and fifteen days after admission it was only 60 mg. per 100 cc. She was discharged the next day.

I have seen this woman at my office several times since her discharge from the hospital, and she states that her mind has cleared, her memory is better, and that she feels more like herself than she had in quite some time. The last blood bromide level taken was 40 mg. per 100 cc.

Case 2

A middle-aged man who had been treated at home for several days because of an ulcerous condition of the mouth was admitted to the hospital on February 2, 1946, complaining of headache and pain in the mouth. He was quite emaciated. A few days after admission he became irrational, refused his food, and tried to jump out of the window. His behavior was such that a policeman was called to watch him. Laboratory studies showed his blood bromide level to be 186 mg. per 100 cc. The patient was given intravenous saline and a high-calorie diet; three days later he was entirely rational and the blood bromides had dropped to 118 mg. per 100 cc.

Following an operation and deep x-ray therapy, the patient was discharged from the hospital on April 20. At no time after his blood bromide level decreased did he show any signs of confusion or excitement.

While I have abstracted some six or eight charts which tell a similar story, I feel that it is unnecessary to report them in detail. These two case reports show how serious this condition can become, and how great is the danger of such patients' being committed to an institution for mental disease.

Bromide Levels in the Blood and Extracellular Fluids

Kleiner[1] states that the blood and extracellular fluids of the body contain about 1 mg. of bromide per 100 cc. Moore and Gray[2], however, think this level is abnormally high for the average individual who is not taking bromide medication, and they state that the normal concentration of bromide varies from .2 to .6 mg. per 100 cc. of blood. The critical level at which signs or symptoms of bromide intoxication appear varies widely.

Read before the Eighth District Medical Society, Elkin, October 17, 1946.

1. Kleiner, I. S.: Human Biochemistry, St. Louis, C. V. Mosby, 1945.

Some persons with extremely high blood bromide concentrations show no signs of toxicity from the drug, and other patients demonstrate signs of extreme bromide intoxication when the concentration of the drug in the blood is quite low. Moore and Gray[2], however, feel that this variance is due partly to laboratory error and not entirely to variations in the sensitivity of patients to the drug.

Levinson and MacFate[3] are of the opinion that signs or symptoms of bromide intoxication never develop with blood levels below 50 mg. per 100 cc., and that when the level in the blood reaches 50 mg., bromide will be detected in the urine; therefore the absence of bromide in the urine is strong evidence against bromism. They feel that the test devised by Wuth[4] is quite satisfactory for detecting the presence of bromide in the urine, and serves as a quick and convenient method of confirming the diagnosis. The comparison of bromide and chloride concentrations in the blood and urine is more valuable than isolated blood bromide determinations alone.

In bromide intoxication the bromide level in all the body fluids, including the cerebrospinal fluid, is almost as high as that in the blood serum. Bromide displaces chloride in the extracellular fluid, ion for ion. It is eliminated from the body almost entirely by the kidney, and some say that the kidney exerts a selective action in excreting chlorides over bromide. Goodman and Gilman[5], however, state: "The kidney makes little distinction between the two halogens but rather functions to maintain the total halogen content of the extracellular fluids at a normal value." This is the reason for the administration of large amounts of sodium chloride in the treatment of bromide intoxication.

Bromide readily permeates the placental barrier, and is found in the blood and urine of infants born of mothers who have been taking the drug prenatally. It is of interest to conjecture whether many newborn babies with an acne-like dermatitis do not have a bromide rash as a result of their mothers' antepartum nerve tonic.

2. Moore, M. and Gray, M. G.: Blood Bromide Determinations: Their Use and Interpretation, J. Lab. & Clin. Med. 27:680-686 (Feb.) 1942.
3. Levinson, S. A. and MacFate, R. P.: Clinical Laboratory Diagnosis, ed. 2, Philadelphia, Lea & Febiger, 1943.
4. Wuth, O.: Rational Bromide Treatment, J.A.M.A. 88:2013-7 (June 25) 1927.
5. Goodman, L. S. and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, Macmillan, 1941.

Symptoms and Signs of Bromide Intoxication

Like most medical conditions, bromide intoxication may be either acute or chronic, mild or severe. The acute cases may progress rapidly to a state of delirium and unconsciousness, or they may take the form of any emotional state of the mentally disturbed patient. These acute cases were described as follows by the late Dr. E. B. Craven[6].

"An individual with one or a variety of medical or surgical (somatic) complaints, has taken bromides during a period of days or weeks. After a variable length of time the patient becomes restless, irritable and emotionally labile and complains of headache, blurring of vision, interrupted sleep and disordered, usually frightening dreams. As these symptoms endure there are observed weakness, ataxia, slurring and hesitancy of speech, irrelevant conversation, poor appetite and loss of memory, particularly for recent events. Drowsiness and lethargy are soon followed by stupor, and sleep is even more disturbed by disordered dreams. Hallucinations, both visual and auditory, become a prominent feature, and maniacal attacks of excitement are provoked by the fear reaction produced."

Patients with acute bromism are commonly seen by the psychiatrist. The chronic and mild cases of bromide intoxication are much more frequent and are of most concern to general practitioners of medicine.

The symptoms of bromide intoxication are quite variable. Dr. Frederic M. Hanes[7] found that headache, irritability, emotional instability, weakness, insomnia, and loss of appetite were the most frequent symptoms in his 400 reported cases of bromism. Accompanying these symptoms were usually complaints of constipation, indigestion, dizziness, and short periods of confusion and loss of memory. The symptoms most prominent and distressing in patients with bromide intoxication are the same as those for which many physicians prescribe bromides, alone or in combination with other hypnotics or sedatives. Unless he obtains an accurate history of the medications which the patient has been taking, the doctor may convert a mild case of bromide intoxication into one of severe bromide poisoning by prescribing additional bromides.

The Prevalence of Bromide Intoxication

After a series of blood bromide determinations on 500 patients seen in the Duke Hospital medical clinic, Dr. Hanes[7] stated:

6. Craven, E. B., Jr.: Clinical Picture of Bromid Poisoning, Am. J. M. Sc. 186:525-532 (Oct.) 1933.
7. Hanes, F. M. and Yates, A.: Analysis of 400 Instances of Chronic Bromide Intoxication, South. M. J. 31:667-671 (June) 1938.

"We have found the information obtained comparable in helpfulness to that furnished by the routine Wassermann test." Sixty-four or 13 per cent of these 500 patients had positive blood bromide tests, and 29 or 5.8 per cent had blood bromide levels of 50 mg. per 100 cc. or above. These findings caused Dr. Hanes to suggest that blood bromide tests should be done on all patients admitted to institutions for mental disease.

Two psychiatric hospitals in North Carolina reported that in 16 per cent of their admissions a blood bromide level of 75 mg. per 100 cc. or above was found, and that in 9.5 per cent the level was above 100 mg. per 100 cc. The State Hospital of South Carolina reported that 12.4 per cent of the patients admitted had a blood bromide level of 75 mg. per 100 cc. or more, and 7.3 per cent a level above 100 mg. Wagner and Bunbury[8] reported that in 7 per cent of 500 consecutive admissions to the Colorado Psychopathic Hospital the patients were suffering solely from bromide intoxication.

Dr. C. P. Stevick[9], acting director of Bureau of Vital Statistics of the State Board of Health, states that bromide poisoning caused one death a year in 1942, 1943, 1944, and 1945. It can be concluded, however, that these cases were those in which bromide was the sole cause of death, and do not include the cases in which bromism was an allied condition. Acute bromide poisoning as a cause of death, even in attempted suicides, is extremely rare. The action of the drug is slow, and the ingestion of amounts sufficient to cause death will irritate the gastric mucosa and produce vomiting before the drug can be completely absorbed.

Bromide compounds are widely used, with and without medical supervision. Bromide is an important constituent of a large number of nostrums—"nerve tonics" and headache powders—which are advertised and sold to the lay public without a physician's prescription. Some of these are highly advertised to women for the relief of those trying periods of life associated with the catamenia and the menopause. This use alone gives it an established place in the medicine cabinet of almost every American home.

Treatment

The treatment of mild cases of bromide intoxication consists in immediate discontinuance of the drug and, unless conditions contraindicate its use, the administration of large doses of sodium chloride—4 to 8 Gm. a day.

Patients with more severe intoxication should be hospitalized. Clendening[10] points out that the administration of intravenous saline as suggested by Wile is not without danger, as the too rapid elimination of bromide causes renal irritation and damage to the glomerular epithelium. He recommends an initial dose of 100 to 150 cc. of physiologic saline intravenously; if this is well tolerated, 300 to 400 cc. may be given two or three times weekly as the condition of the patient may require. Frequent urinalyses should be made.

Yater[11] is an advocate of frequent gastric lavage, and even suggests Wangensteen suction to aspirate the hydrobromic acid formed by the gastric mucosa. This, of course, is a hospital procedure reserved for the acutely ill and stuporous patient who is unable to take sodium chloride and food by mouth.

Freireich and Landsberg[12] have used intravenous amphetamine sulfate in treating 14 cases of coma resulting from overdoses of barbital, and even though these patients had taken the drug with suicidal intentions, they had only one fatality in this series. They feel that amphetamine sulfate warrants a trial in all cases of coma resulting from drug intoxication.

The importance of proper nursing care for these acutely ill and mentally disturbed patients should be impressed upon the nursing staff of the hospital, or upon the members of the family if the patient is at home. A nutritious and easily digested diet which is both adequate and appetizing should be provided. Vitamins should be given hypodermically; their mode of administration is not so important, however, as the administration of a quantity sufficient to provide for the metabolic requirements of the body.

Conclusion

Bromide intoxication, especially in its milder forms, is a common condition which is too frequently overlooked. Since the symptoms of mild bromide intoxication are sug-

8. Wagner, C. P. and Bunbury, D. E.: Incidence of Bromide Intoxication among Psychotic Patients, J.A.M.A. 95:1725-1728 (Dec. 6) 1930.
9. Stevick, C. P.: Personal communication.
10. Clendening, L. and Hashinger, E. H.: Methods of Treatment, ed. 8, St. Louis, C. V. Mosby, 1943.
11. Yater, W. M.: Fundamentals of Internal Medicine, ed. 2, New York, D. Appleton-Century, 1944.
12. Freireich, A. W. and Landsberg, J. W.: Amphetamine (Benzedrine) Sulfate for Acute Barbiturate Poisoning, J.A.M.A. 131:661-663 (June 22) 1946.

gestive of a neurosis, the physician should be careful to obtain an accurate history of all medication the patient has been taking before prescribing a bromide compound for "nervousness." In any event such a medication should never be continued over long periods of time.

PERSONAL HISTORY OF PULMONARY TUBERCULOSIS IN LIFE INSURANCE MEDICAL APPRAISAL

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Life insurance work would be simplified if a personal history of pulmonary tuberculosis could be disregarded in all candidates for insurance in whom tubercle bacilli have never been demonstrated—and there might not be much disturbance of mortality rates were such a policy to be pursued.

We are familiar with patients who do not have tuberculosis and have never had it, yet have a "personal history" of tuberculosis because some physician has made a diagnosis of pulmonary tuberculosis on symptoms alone in conditions ranging from bronchiectasis to hyperthyroidism or impacted third molars. They are sent to a sanatorium, where the diagnosis is corrected, but the patients spend far too much of the remainder of their lives explaining that they have never had tuberculosis. Many of these patients become neurotics permanently. Insistence on the demonstration of tubercle bacilli for a diagnosis, or on a period of observation, would usually prevent this unfortunate occurrence. A number of years ago, in a well ordered tuberculosis hospital, I observed a man who clinically had tuberculosis of his right middle and lower lobes. At autopsy a liver abscess was found to have ruptured through the diaphragm and produced the confusing picture. Similar errors occur wherever a diagnosis of tuberculosis is made without the demonstration of tubercle bacilli.

Almost any physical ailment and some psychosomatic disturbances simulate pulmonary tuberculosis and may disturb a conscientious examiner. A differential diagnosis is often difficult or impossible to make except by a positive sputum. This is not so dangerous as it might sound, since so many of the possibly confusing diseases are also uninsurable. Examples are silicosis, malignancy, chronic heart disease, Hodgkin's disease, bronchiectasis, chronic mycotic infections, congenital circulatory abnormalities, neurasthenia, hyperthyroidism, and many others. In almost all cases, however, by a period of observation or insistence on tubercle bacilli for a diagnosis the correct diagnosis can be made by the average physician. Waiting for tubercle bacilli to be found may not appeal to underwriters, but we all know that only rarely is a diagnosis of pulmonary tuberculosis made before the bacilli are present in the sputum. From 75 to 90 per cent of patients who have definite clinical symptoms before their disease is discovered are in the moderately advanced or far advanced stage. These figures are the result of examinations by all physicians, including the best tuberculosis experts, and the record of life insurance medical examiners is probably very similar.

The original diagnosis of tuberculosis, whether pulmonary or involving some other body system, is often difficult. Pulmonary tuberculosis can possibly be diagnosed at times by x-ray films before tubercle bacilli are found in the sputum, but in general we are only being reasonably conservative in insisting that no diagnosis of tuberculosis should be made without finding tubercle bacilli. Applicants for insurance who have a history of tuberculosis are much more easily handled; we know they have had tuberculosis, the diagnosis has been made, and the important thing to consider is whether the disease is arrested. X-ray examinations, sputum examinations and careful chest examinations are accepted as essential procedures before a medical appraisal can be made.

In the Occidental Life Insurance Company we insure arrested cases of tuberculosis, many of them at standard rates. However, we always require a recent examination with x-ray and a report by a tuberculosis expert. Fluoroscopy is not accepted as adequate. We prefer that the examination be made at the institution at which the applicant was treated and the disease arrested. We consider that these cases are good risks; they have taken the cure and know how to protect themselves from reinfection or relapse. The

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incidence of recovery in early or minimal cases is so high that they would not constitute a serious hazard were recurrences or reinfections to develop. Our experience with these cases has been very favorable. We have had no claims in many years from arrested cases; our experience with family contacts has not been so favorable. For every known personal contact there are likely to be several unknown exposures. Physicians recognize this danger and usually instruct relatives as to proper precautions against infection.

Fortunately, tuberculosis does not impose the hazard seen several years ago when million dollar policies were in vogue for men who had just learned from electrocardiograms that their life expectancy was short. If recognized and treated early in the course of the disease, tuberculosis does not impose hazards comparable to myocardial infarcts, and any large policy holder is likely to secure adequate treatment and arrest of the tuberculous process if he learns of it in the early stages.

Tuberculin Test

In the Occidental Life Insurance Company we do not use the tuberculin test, we have never used it and we disregard reports regarding adults based on a tuberculin test alone. One could not consider any positive tuberculin test, *per se*, an impairment. The tuberculin test has a screening value in children to suggest which need investigation by x-ray. and other procedures, but is of very little value in adults.

Any system of the body may be involved by a tuberculous infection; especially is this true in childhood. Many of these heal and remain quiescent throughout a long life of good health, though ready to break down and disseminate active tubercle bacilli should circumstances favor such an accident. Many patients recover entirely with no residual signs that can be demonstrated. As a result, a great proportion of adults over 25 years of age show a permanently positive tuberculin test. A large percentage of these positive reactors do not have any demonstrable tuberculous disease and will never show any.

A positive tuberculin test is quite upsetting to anyone, no matter how healthy the individual may be. However, this experience might be justified were the test reliable.

In adults, as well as in many children, the test has been discredited widely, though it has many advocates who are experts in the field of tuberculosis. Before we accept its use and attach too much credence to results of the test, we should be cognizant of several facts[1]:

1. The tuberculin test is often negative in far advanced or malignant tuberculosis.
2. During a period of three to eight weeks following the onset of a tuberculous infection, the individual is tuberculin-negative.
3. Repeated tuberculin tests may cause the reaction to become negative from desensitization.
4. There is good evidence that a tuberculous infection confers some immunity; if so, a tuberculin-positive reactor should be a better insurance risk than a negative reactor, provided there is no demonstrable activity about the body[2].
5. A positive tuberculin test demonstrates the ability of the individual to develop immunity to the infection.

From an economic standpoint, mass x-ray filming is cheaper. For tuberculin tests, the individual must be seen and tested; then return visits are required, at least once, and often more, to read the results of the test. If the test is positive, the individual must return for x-ray. If much value is placed on time, an initial film made on 70-mm. film at a cost of five cents is cheaper than the repeated visits for tuberculin testing without filming of approximately half of the adults. Also, there is too strong a personal element in tuberculin testing. It is probable that every adult would show a positive tuberculin test if tested with a large enough dose of tuberculin. So, while there are standards for testing, it appears that with adults it is a question of how much reaction to tuberculin is present.

Pleurisy

A history of pleurisy is about as indefinite from an insurance standpoint as a history of tuberculosis without the demonstration of tubercle bacilli. There was a time when pleurisy was assumed to be tuberculous until proved otherwise.

Now we recognize that many thoracic pains are not pleurisy. Often a diagnosis of pleurisy is made when some very different

1. (a) Pinner, Max: Pulmonary Tuberculosis in the Adult. Springfield, Illinois, Charles C. Thomas, 1945, p. 159.
   (b) Miller, J. A. and Wallgren, A.: Pulmonary Tuberculosis in Adults and Children. New York, Thomas Nelson and Sons, 1939, pp. 30, 116.
2. Pinner, Max(1a), p. 92.

condition is responsible for the pain. Also, many pleuritic pains, such as from spontaneous collapse of a lung, may be associated with pleurisy and effusion but present nothing to prove a tuberculous infection. Bronchiectasis causes pleurisy, cough, sputum and more tendency to hemoptysis than tuberculosis, with no tubercle bacilli in the sputum.

In contrast is the fact that true tuberculous pleurisy, usually present at the apex, is very often diagnosed as neuritis or rheumatism of the shoulder. Far too frequently a normal appendix is removed because of the referred pain of diaphragmatic tuberculous pleurisy.

An applicant for insurance who gives a history of pleurisy should have x-ray studies made. Agents should be willing to cooperate and favor this investigation since it can usually help secure a standard rate for the policy.

There is room for serious doubt that pleurisy should be considered tuberculous unless there is some definite proof. If there is reasonable ground for suspicion, a short waiting period will usually rule out tuberculosis.

Sputum

The free use of sputum examinations in all applicants who give a history of a cough of any type is indicated. Any cough is usually referred to by the possessor as "a cigarette cough." There should always be a careful study of sputum for any applicant who has a cough. If there is cough, there is usually sputum if the examiner will instruct the applicant as to methods of producing sputum and collecting it[3]. Too many examiners do not report "a cigarette cough," considering it inconsequential.

It is quite possible that in the matter of sputum examinations we are more lax than in any other phases of studies for medical appraisal of risks. Sputum specimens are easily collected and the examination of the specimens is not too difficult, especially in comparison with the information that can be obtained by this means. The culture of sputum for tubercle bacilli has appeared to be quite formidable in the past, but with some of the newer synthetic media excellent results are being obtained. Sputum cultures are becoming much more popular and are certainly far more dependable than smears.

3. Caviness, Verne S., in *Proceedings of the Twenty-Eighth Annual Meeting of the Medical Section of the American Life Convention*, 1938, p. 111.

Routine Surveys

Probably the most effective method of improving control of tuberculosis will result from very early diagnosis—much earlier than is customary at present. Routine surveys are being made of large groups of persons by many large manufacturing plants, health departments, schools and others. These are made relatively inexpensively on 35 or 70-mm. film which can be magnified for study. Such surveys act not only as safeguards for the individual and for the population as a whole, but they pick up early cases of tuberculosis in the stage that is easily cured.

In other groups, the tuberculin test is used on the entire group and films are made of all who show positive intradermal reactions. Other investigators give fluoroscopic and stethoscopic examinations to all reactors. These tests are very valuable in skilled hands, but cannot detect pulmonary lesions at as early a stage as x-ray films. In the average hands, fluoroscopy is of no more value than stethoscopic examinations.

Mass chest x-ray surveys, which are being started widely and appear likely to be continued indefinitely, should locate practically all active clinical cases in any group in the early stages. From 75 to 90 per cent of patients who have definite clinical symptoms before their disease is discovered are in the moderately advanced or far advanced state. When large groups of apparently healthy people are x-rayed, from 65 to 85 per cent of those found to have tuberculosis have the disease in the minimal stage. Ninety per cent of all patients with minimal tuberculosis who take the cure will live out their normal span of life. A comparison of these figures will give an idea as to how wide a margin there is between recognized and unrecognized cases in any group of the population. Early diagnosis and treatment will make 90 per cent of tuberculous patients eligible for life insurance at standard rates.

In the future, life insurance companies may be able to have access to files of mass x-ray chest films and use them in medical selection. Each applicant now should be quizzed as to whether chest films have been made, and applicants should sign a routine requisition for such information. This would speed up the handling of applications for

insurance and often help the applicant secure a better rate on his policy.

Appraisal of risk in applicants who give a history of pulmonary tuberculosis is much easier than it was twenty years ago. Mortality and morbidity rates from tuberculosis have dropped very substantially and can reasonably be expected to continue to drop. The hazard is now so much less that rates for applicants with healed tuberculosis have been lowered.

It is certainly now well in order to consider whether any group of applicants with arrested pulmonary tuberculosis will not show a more favorable mortality ratio than a group of applicants with blood pressure readings of 135 systolic, 88 diastolic—for which condition a standard rate is used.

Tuberculosis—A Diminishing Hazard

Fortunately for life insurance companies, as well as for applicants, tuberculosis is a diminishing hazard. Undoubtedly, this fact is largely a result of education and intensive treatment. In 1900 the death rate in the United States from tuberculosis was listed as 202 per 100,000 population. This figure is probably fairly accurate. In North Carolina in 1915, which was the first year that reasonably accurate statistics were available, the death rate was 156.4 per 100,000. The same year, 1915, the national death rate from tuberculosis was 140.1. For the year 1944, the national rate was 40.8 per 100,000 and for North Carolina it was 30.2 per 100,000. In spite of the 29 per cent Negro population in North Carolina, the national death rate from tuberculosis in 1944 was one third higher than in North Carolina. Of the 1132 deaths from tuberculosis in North Carolina in 1944, 684 occurred among the 29 per cent Negro population, and only 448 among the 71 per cent white population[4].

North Carolina has pioneered in tuberculosis control. In 1906 the first state-owned and operated tuberculosis sanatorium was built at Sanatorium, North Carolina, and has been in continuous operation, with two large additional units later built in the western and eastern sections of the state. Twenty counties—ten rather extensively—also operate county institutions for the diagnosis and treatment of the disease. Tuberculosis among cattle has been eradicated as a state procedure. There are as many beds in tuberculosis institutions for the 29 per cent Negro population as for the 71 per cent white population. Negroes have full opportunity for diagnosis and treatment, but in general are not susceptible to too much education, so the discrepancy in death rates between the races is largely due to lack of cooperation and to an apparently greater susceptibility among Negroes.

This record appears to suggest that tuberculosis can be controlled and probably eliminated as an insurance hazard. In the white population of North Carolina it is certainly not now a serious life insurance hazard—approximately 20.2 deaths per 100,000 population as compared with the national rate of 40.8 per 100,000.

Rapid strides have been made in the treatment of pulmonary tuberculosis[5]. In 1922, as a resident, I watched the healing of cavities by the slow natural course and the more rapid healing with artificial pneumothorax. Since that time my friends have shown me many patients whose cavities have healed.

Many new methods of treatment have been tried and found to be effective. A recent innovation is the simple use of lucite balls[6] to obviate the necessity of the radical operation of thoracoplasty — usually performed in patients scarcely able to cope with such a procedure.

Streptomycin

Much wishful thinking and over-optimism have obscured the facts regarding the value of streptomycin in the control of tuberculosis. The full details of the effect of streptomycin on tuberculosis have not been determined. It has been recognized for some time that from its use there is a profound inhibitory effect in guinea pigs, but tubercle bacilli can be demonstrated in 75 per cent of the pigs. In human beings, it has an inhibitory effect on the growth of bacilli, and lesions may regress or even heal. The disease becomes more protracted, with some fibrosis and evidence of healing. All miliary cases can be expected to die, and other cases are protracted without recovery. In tuberculous meningitis there may be evidence of healing of the process, but the patient is likely to be made mentally defective and blind. In addi-

4. Yerushalmy, J. and Moriyama, I. M.: Tuberculosis Mortality in the United States and in Each State, U. S. Pub. Health Rep. 61:487-516 (April 5) 1946.

5. Pinner, Max(1a), pp. 73, 76.

6. McCain, Irene, and McCain, Paul P.: Revival of Extrapleural Pneumonolysis with the Use of a New Filling Material, Methyl Methacrylate, North Carolina M. J. 8: 6-12 (Jan.) 1947.

tion, streptomycin causes a disturbingly high incidence of disconcerting reactions, such as fever, skin eruptions, vertigo, tinnitus, and deafness, which are very likely to appear at about the eighth to the tenth days of treatment. Severe renal involvement with albuminuria and casts, may appear after two to three weeks of treatment[7]. It is reasonable to conclude that streptomycin will never have a very extensive use in medicine and that it will not be likely to find favor for use in tuberculosis.

Conclusions

1. The medical director is faced with an important task in appraising insurance applicants who have a personal history of tuberculosis. He needs examinations by experts in the field of tuberculosis.

2. It is apparent that an applicant with a personal history of pulmonary tuberculosis requires individual attention and study. Every case is different and should be considered individually after a thorough investigation of the extent of the original involvement, the thoroughness of healing, the degree of cooperation of the patient, and many other factors that vary widely but materially influence the risk. By such a study, many applicants can safely be given policies at standard rates if their lesions are completely healed.

3. A diagnosis of tuberculosis without the finding of tubercle bacilli results in many false-positive diagnoses, and is rarely if ever justified or necessary.

4. The tuberculin test serves a very useful place in the evaluation of tuberculosis in children. In adults, it is too misleading to warrant its use for life insurance purposes.

5. Tuberculosis is a rapidly diminishing hazard.

6. A history of contacts is much more hazardous than a history of healed tuberculosis. Every examiner should question the applicant carefully and report in detail regarding all personal contacts with tuberculosis, making his report especially detailed if an intimate association has existed.

The author wishes to thank Drs. P. P. McCain, S. M. Bittinger and T. F. Vestal for valuable assistance in the preparation of this paper.

7. Keefer, Chester: Streptomycin, discussion at American College of Physicians' meeting, Philadelphia, May 13, 1946.

SOME ALLERGIC MANIFESTATIONS OF THE EYE

W. P. SPEAS, M.D.

WINSTON-SALEM

The fact that allergy is assuming more and more importance in the general medical field has prompted me to bring to the attention of this section this elusive and intangible subject as applied to the human eye. All of us have numerous patients with puzzling irritative eye conditions which are never diagnosed or fully understood. All possible questioning of the patient and investigation of his contacts, exposures, and habits of life give us only a small fraction of the total picture. Often we accidentally stumble on the true nature of the case. Perhaps a patient comes for a change of lenses, stating that he has no discomfort all day in his office, but that when he attempts to read the daily paper in the evening his eyes itch and burn so that he has to abstain from the effort. Such a patient may be sensitive to the fresh printer's ink on his newspaper. The remedy in such a case would be for the patient to keep his fingers away from his eyes after handling his paper. A woman may suddenly develop an edematous condition of the conjunctiva while on a shopping expedition. The remedy in this case would likewise be simple, if we could only know that she is sensitive to mold and that on leaving home she had put on a pair of leather gloves which had been stored away for months.

Ocular Diseases Produced by Allergy

Almost any tissue of the eye may be affected by allergic disorders, and the list of ocular conditions in which allergy has to be considered as a possible etiologic factor is almost as long as that of the offending agents themselves. The pathologic ocular manifestations of allergy include angioneurotic edema, dry and ulcerative marginal blepharitis, chalazia, follicular conjunctivitis, vernal conjunctivitis, phlyctenular conjunctivitis, and keratitis and tuberculous ulcerative keratitis[1]. There may be ulcers or interstitial opacity of the cornea[2], iritis, iridocyclitis,

Read before the Section on Ophthalmology and Otolaryngology of the Medical Society of the State of North Carolina, Pinehurst, May 3, 1946, with a film in colors on "Vernal Conjunctivitis," lent by Dr. Louis Lehrfeld of Philadelphia.

1. Urbach, E.: Diagnosis and Treatment of Food Allergens through Propetans, Ann. Allergy 1:219-34 (Nov.-Dec.) 1943.
2. Lemoine, A. N.: Allergies in Ophthalmology, Arch. Ophth. 28:79-92 (July) 1942.

uveitis, endophthalmitis, retinal hemorrhage or detachment, lesions of the choroid, optic neuritis, retrobulbar neuritis[3], sympathetic ophthalmia, cataract, or scintillating scotoma. In rare instances the extraocular muscles may be affected.

In cases of ocular allergy due to syphilis, antisyphilitic chemotherapy and fever therapy are indicated[2]. In cases due to tuberculosis, the patient should receive the usual treatment for this disease, plus weekly intradermal injections of tuberculin. Some cases of allergic ocular disease due to tuberculosis responded to desensitization by the inhalation of boiling suspensions of dead tubercle bacilli.

Uveitis, retinal hemorrhage, and detachment of the retina may follow insulin therapy. Keratitis phaco-anaphylactia is due to sensitization to lens protein. Cataract may develop as a result of hypersensitivity to dinitrophenol[4]. Allergic cataract in young adults is always bilateral and occurs in previously normal eyes. Cataract was described in 10 patients showing a constitutional allergic predisposition[4]. In patients sensitive to lens protein it is important that desensitization be accomplished before removal of the cataract. Patients suffering from sensitivity to uveal pigment should also be desensitized before undertaking ocular surgery, as sympathetic ophthalmia has been attributed to such hypersensitivity.

Some cases of severe ophthalmitis involving the cornea and iris and associated with increased pressure and severe visual disturbance have been interpreted as allergic, because of the associated Quincke's edema. The eye and its adnexa are frequently sympathetically involved in allergic diseases of other organs. The parenchymatous keratitis of congenital syphilis has been interpreted as being of allergic origin. Allergic conditions often follow operations on the eye which liberate various metabolic products.

Allergens Responsible for Ocular Manifestations

Among the offending agents may be substances of mineral, vegetable or animal origin. The patients may be found sensitive to emanations from horses, dogs or cats, to ointments containing wool fat, to proteins or metabolic products within their own bodies[5], or to bacteria, fungi, pollens, fumes or dust.

Cases of ocular disorders due to poison ivy and poison oak have been reported. Insect bites, clothing, and bedding materials have been incriminated. Numerous cosmetics, including rouge, hair rinses and dyes, and mascara[2], not to mention various lotions and soaps[3], may give rise to allergic symptoms. Hypersensitivity to foods such as cantaloupe[6], milk[7], eggs, wheat, beans, cherries, strawberries, coffee, and so forth, may be manifested by ocular symptoms. Among the many drugs known to have been responsible for diseases of the eye are aspirin[6], atropine[8], mercury, silver nitrate[3], barbiturates, camphor, quinine, coal-tar products, carbon tetrachloride, dinitrophenol, sulfathiazole[9], local anesthetics[10], eserine, pilocarpine, zinc sulfate, vaseline, and sesame oil. Simple mechanical irritation such as plucking the eyebrows may give rise to allergic manifestations in some patients, while in others light, heat, cold, x-rays or ultraviolet rays may be allergenic.

Diagnosis of the Etiologic Agent

With such a formidable array of possible etiologic agents, diagnosis is not always an easy matter. In some cases, to be sure, mere questioning of the patient regarding his own history and the family history may reveal allergic traits or the history of repeated attacks either seasonally or in connection with certain habits or occupations of the patient. Often a better history can be obtained by requesting the patient to fill out a questionnaire regarding the varied and multiple conditions and associations which may be of etiologic significance, including the family history, history of operations, accidents, aversions, intolerance to prescribed medicines, diseases such as asthma, hay fever and

3. Glover, L. P.: Ocular Allergy, Pennsylvania M. J. 43: 1083-4 (May) 1940.
4. Beetham, W. P.: Atopic Cataracts, Arch. Ophth. 24:21-37 (July) 1940.
5. Lehrfeld, Louis: The Eyelids and Conjunctiva as Shock Tissues in Allergy, Dis. Eye, Ear, Nose & Throat 1:100-105 (April) 1941.
6. Thomas, J. W. and Warren, W. A.: An Analysis of 30 Consecutive Cases of Allergic Conjunctivitis, Cleveland Clin. Quart. 7:3-9 (Jan.) 1940.
7. Kluever, H. C., Coughlan, C. H. and Martin, L. M.: Hypersensitiveness of the Conjunctiva and Cornea, J. Iowa M. Soc. 31:572-576 (Dec.) 1941.
8. Bab, W.: Allergy of the Eye, Am. J. Ophth. 24:759-767 (July) 1941.
9. Morrison, W. H.: Allergic Conjunctivitis and Dermatitis from the Topical Use of Sodium Sulfathiazole and Sulfathiazole, Am. J. Ophth. 25:1104-5 (Sept.) 1942.
10. McAlpine, P. T. and Berens, C.: Allergic Dermatitis and Blepharoconjunctivitis Caused by Pontocaine, Am. J. Ophth. 25:206-208 (Feb.) 1942.

migraine, and the psychic status of the patient.

In some cases little pertinent information may be gleaned from the history. The physician may have to visit the home and working quarters of the patient in an effort to discover the offending agent. In obscure cases it is best to have the patient submit to a complete general examination, including blood chemistry determinations, Wassermann test, tuberculin test, and determination of the basal metabolism. A special examination by an allergist may then be necessary. The possibility of combined etiologic factors must be considered; in such cases one factor may be endogenous and the other extrinsic. In one case of combined bacterial and food sensitivity the conjunctivitis cleared up following 30,000 units of staphyloccus antitoxin, but the corneal lesions did not subside until beans and wheat were eliminated from the diet.

In a number of cases skin tests may yield the desired information. For this purpose one may employ the patch test, scratch test, or intradermal test. Jadassohn-Bloch has devised a patch test yielding a maximum reaction after twenty-four hours. The intracutaneous test is said to be the most reliable, however. A. C. Woods[11] and Lehrfeld recommended intracutaneous tests yielding results within fifteen minutes.

Occasionally cutaneous sensitivity does not parallel the sensitivity of the conjunctiva, so that an additional eye test becomes necessary. For the latter a 1:10, 1:100, or 1:1000 dilution of the antigen is instilled into the conjunctival sac. The reaction is considered positive when there occurs an immediate reddening and swelling. In such cases the conjunctival sac should be rinsed at once with adrenalin, in order to avoid a severe reaction.

If these tests fail to make the diagnosis clear, one may have to resort to elimination or avoidance tests, and try to discover the offending agent by removing the patient from various contacts and eliminating different foods in turn. Taking out a rug, changing the patient's mattress, pillows or clothes, or removing animals or plants from the house may finally give the answer. In some obscure cases removal of foci of infection may clear up the allergic disorder.

11. Woods, A. C.: Allergy and Immunity in Ophthalmology, Baltimore, Johns Hopkins Press, 1933, p. 98.

Vernal Conjunctivitis

One of the most common allergic ocular manifestations is vernal conjunctivitis. This may be a transitory condition disappearing spontaneously at the end of the pollinating season. There are two types of this disease —the limbic and the lid type[5]. The limbic type is characterized by phlyctenular-like vesiculation at the limbus. The blebs may be either discrete or confluent, so that an arc may involve the whole circumference of the limbus. The lid type is a more severe and persistent condition and may recur throughout the winter after the pollinating season is over. It is associated with a heavy, viscid, "chewing gum" type of mucus. The conjunctival surface of the lids, especially the upper, exhibits a simple follicular conjunctivitis. After several years, these follicles may present a cobblestone appearance, or may even become giant graulomas. The limbic and lid types are never seen together in the same eye. The Negro never has the lid type.

Pathologic picture

Pathologic specimens of the lid type of vernal conjunctivitis reveal new mucous glands, from which comes the characteristic "chewing gum" mucus seen in no other eye disease. Eosinophils are seen in the tissues and blood vessels. The "chewing gum" mucus is composed of mucus, epithelial cells, lymphocytes, and often eosinophils. The lesions in the limbic type consist of a few phlyctenules and blebs at the limbus, with blood vessels pointing up to them but not reaching the cornea. A mild conjunctivitis, with mucous discharge, is present. Lehrfeld says that the pathology of the lid type of vernal conjunctivitis is comparable to that of urticaria of the skin, while the pathology of the limbic type compares with that of eczema.

Symptoms

In both types of vernal conjunctivitis the main symptoms are itching, lacrimation, redness and edema of the lids, and eventual scaling and even ulceration. The conjunctiva shows a boggy infiltration and a discharge that is at first slightly purulent. Secondary infection may confuse the picture.

Itching is one of the chief symptoms requiring treatment. It may be very severe, and serves occasionally as an aid in differentiating vernal conjunctivitis from catar-

rhal conjunctivitis, pink-eye, and trachoma. In acute catarrhal conjunctivitis itching occurs only after the discharge has subsided. In pink-eye, the itching is of shorter duration and responds promptly to treatment, while in trachoma itching is absent. In pink-eye, a smear from the conjunctival disc will show the Koch-Weeks bacillus. In trachoma there is no eosinophilia, no seasonal incidence, and no viscid mucus; the blood vessels seem to extend to the cornea, and visual acuity, which is not often affected in vernal conjunctivitis, is impaired. In trachoma of long standing there is evidence of secondary pannus.

Treatment

Various measures have been suggested to relieve the symptoms of vernal conjunctivitis until the offending allergen can be discovered and desensitization accomplished, or for use in patients who refuse the exacting process necessary for diagnosis and proper specific therapy. General treatment includes rest, fresh air, and hygienic measures. Foci of infection should be removed, and any associated disease should receive adequate treatment. In cases of sensitivity to food good results have often been obtained by the oral administration of histaminase in doses of 20 units three times a day. Calcium may also be administered in small oral doses over a long period. In some cases the administration of vitamin D or riboflavin has been found of benefit. Frequently a salt-free diet may give relief, and patients are advised to avoid conserved foods.

Frequent irrigations with saline, boric acid solution, or boroglyceride are helpful. Pure paraffin oil may be applied, and then washed out with lukewarm saline. For local eczema of the lids, Lemoine[2] recommends a 2 per cent silver nitrate solution. Astringents and antiseptics should be avoided. Lotions of a low *p*H and cold compresses often give relief. Occasionally in very severe cases 0.25 per cent neosynephrine hydrochloride solution or 1:2000 epinephrine hydrochloride may be tried.

The late Dr. Emory Hill[12] advocated the use of 1 per cent acetic acid, followed by ice packs, three times a day to allay itching. Lehrfeld[5] uses a 1 per cent phenacaine solution, 3 drops three times daily, or more often, especially at night when the itching is worse. This should be followed immediately by 3 drops of epinephrine in a 1:1000 solution. Cold compresses or application of a handkerchief saturated from an ice cube will prove of value in relieving symptoms. Smoked glasses may be worn to protect the eye from dust, wind and pollens, as well as from light. The eye should be irrigated seven times during the day—before and after each meal, and before retiring. After each irrigation three drops of a 1 per cent solution of monohydrated sodium carbonate in 5 per cent alcohol is instilled into each eye, to remove the tenacious mucus. It is emphasized that the applications of phenacaine and adrenalin must be made after and not before the irrigations.

12. Hill, Emory: Personal communication.

Summary

Some allergic manifestations of the eye are enumerated, and a few of the allergens which may be responsible for these conditions are listed.

Methods which may be used to diagnose the etiologic agent in cases of ocular allergy are discussed.

Vernal conjunctivitis and its treatment are considered.

Maternal Welfare Section*

INDICATIONS FOR THERAPEUTIC ABORTIONS

There is no therapeutic procedure in the practice of medicine for which indications are as poorly outlined as for the obstetric operation of therapeutic abortion. The moral and ethical considerations are often the principal guides which are followed by our profession in arriving at a decision to perform this serious procedure. For this reason, it is not remarkable that the indications vary widely from one locality to the other, and that the socio-economic and socio-medical factors play a prominent part in the decisions which are made. In the medical curriculum of a decade ago, a definite place was provided for teaching medical ethics and the sound ethical principles which have been

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largely responsible for the highly respected position of the medical fraternity in America. During recent years the restricted curriculum and the expanding need for teaching the rapidly developing specialties have curtailed the amount of time given to these fundamental principles of medical ethics.

The incidence of therapeutic abortion in representative clinics in the United States during recent years shows the divergent philosophy observed in regard to this serious problem. The incidence of this procedure has been shown by Cosgrove[1] to range from 2.88 per cent of obstetric admissions for Johns Hopkins Hospital during 1941 and 1942 to a low of 0.006 per cent for the Margaret Hague Maternity Hospital between 1931 and 1943. The ratio in the first instance is 1 therapeutic abortion to 35 deliveries, in the latter, 1 to 16,750 deliveries.

Cosgrove has also shown that the meaning of therapeutic abortion is poorly defined, and that the law in most of the jurisdictions of this country is based upon the old English common law, which contains little of a specific character.

It may be said that the medical profession, from the nature and obligations of its work, is and will continue to be a highly ethical group. Nowhere does this ethical sense have a more direct bearing than in relation to abortions. The present concept of the place of therapeutic abortion makes it a procedure which is indicated only when the evidence shows that the pregnancy imminently threatens the life of the mother. A maximum rather than a minimum number of persons should participate in the decision to perform such an abortion.

This procedure is a highly dangerous one under the most desirable circumstances. Since last August three women in North Carolina have lost their lives as a result of the procedure, which was offered to them and to their families as a life-saving measure. There is no question but that therapeutic abortion has a place in the field of obstetrics. However, few absolute indications for the operation exist. Practically all of the complications for which the procedure is usually suggested can be managed successfully when sufficiently skilled professional help is available, when there are facilities offering the patient the advantage of every modern obstetric technique, and when the patient is able to follow the advice of the physician. In such cases the indication for abortion is a relative one, and the decision to suggest this solution is influenced by the patient's social and economic status, which influences her ability to follow rigid rules of conduct and care; by her intelligence and that of her family, which influence her willingness to accept and follow the advice; and by the availability of specially trained medical personnel and modern facilities.

Absolute Indications

The only generally accepted *absolute* contraindication to pregnancy and *absolute* indication for therapeutic abortion when pregnancy occurs is hypertension resulting from renal disease. The toxemias (hypertension in pregnancy) have recently been reviewed in this section of the JOURNAL[2]. The present concept is that pregnancy should be interrupted when renal disease with clear evidence of renal deficiency is present during the early weeks of gestation. Pregnancy in the presence of other hypertensive lesions has a variable prognosis, and a careful etiologic diagnosis must be made in order to reach a proper decision as to whether or not pregnancy must be terminated.

Relative Indications

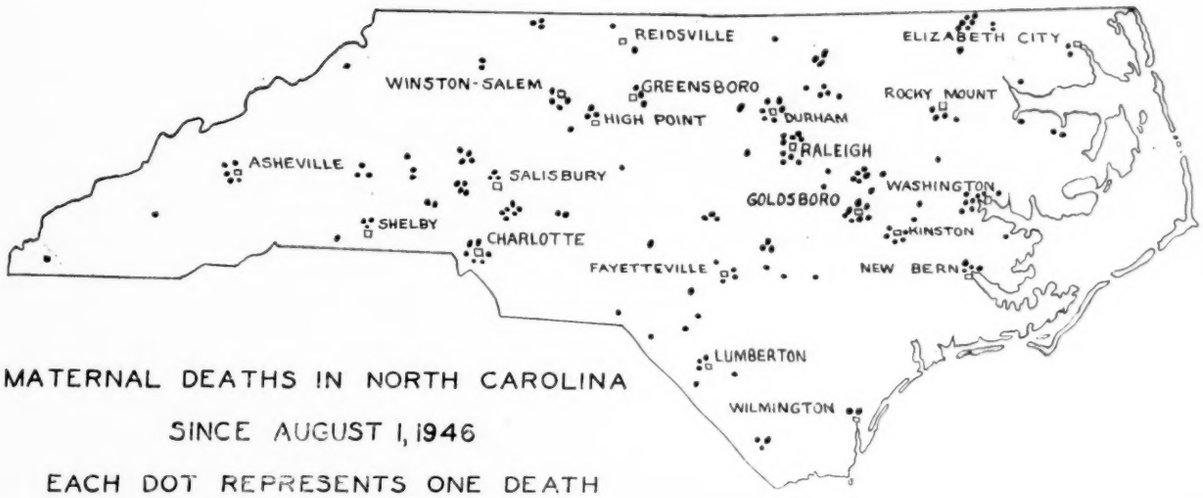
Relative indications for the interruption of pregnancy include numerous medical problems and require careful evaluation of the many factors which must be considered in each individual case. Errors occur much more frequently as a result of radicalism than through failure to interrupt pregnancy.

1. *Heart disease.* Experience of the principal clinics suggests that there is justification for abortion only in the gravest cases. When sufficiently careful management is given, the prognosis of pregnancy and labor in such cases is slightly better than the prognosis of an operative interruption of pregnancy. Highly specialized supervision of the patient's course is essential to good results, however, and her ability to receive and accept this care must always be considered.

2. *Hyperemesis gravidarum* was a common indication for therapeutic abortion in years past. With the advent of treatment by intravenous glucose, parenteral vitamins,

1. Cosgrove, S. A., and Carter, P. A.: A Consideration of Therapeutic Abortion, Am. J. Obst. & Gynec. 48:299-314 (Sept.) 1944.

2. The Management of the Toxemias of Pregnancy, Maternal Welfare Section, North Carolina M. J. 8:31-34 (Jan.) 1947.



and other special procedures, it has been removed from the group of acceptable indications. Kuder and Finn[3] call attention to the fact that in the New York Hospital no pregnancy has been interrupted for vomiting since 1938. In Cosgrove's series of 290 patients treated for this condition there were no deaths; one therapeutic abortion was performed in 1939, and in retrospect he questioned the necessity of this.

3. *Pulmonary tuberculosis and tuberculous lesions in other areas* present a highly specialized problem. Decided differences of opinion exist. Many qualified observers feel that pregnancy has little effect upon pulmonary tuberculosis which is under adequate treatment, and that the lesion is not seriously accelerated in the course of pregnancy if it is given sufficient treatment. On the other hand, tuberculosis under any circumstance is an extremely serious condition, which may progress rapidly unless sufficient treatment is given. The decision as to the management of pregnancy in the presence of this disease must be left to the phthisiologist.

4. *Urologic lesions of infectious types* (pyeloureteritis) seldom, if ever, indicate an interruption of pregnancy since the advent of chemotherapy and the treatment of these lesions with antibiotics. Other urologic lesions, including stones, polycystic kidneys, and kidney tumors, are problems which require individual consideration in each case.

5. *Neurologic and psychiatric disease* has become an important problem as related to pregnancy. Genuine psychiatric consultation should be obtained before a decision is reached, and therapeutic abortion is never indicated unless the condition is grave enough to contraindicate any future pregnancy. Epilepsy is also a highly specialized problem, and specific techniques of diagnosis, including electroencephalograms and examination of the husband, are necessary before a decision is made to interrupt pregnancy in the presence of this condition.

6. *General medical and surgical problems* at times provide an indication for therapeutic abortion. Kuder reports the use of therapeutic abortions in 2 patients with Hodgkin's disease, one patient in whom ulcerative colitis had resulted in invalidism, and 4 with previous carcinoma.

In general, an attitude of ultra-conservatism should prevail, and therapeutic abortion should be recommended and performed only when the diagnosis has been proved and when the lesion is one with an extremely poor prognosis which is adversely affected by pregnancy. *Therapeutic abortion is never justified for the chronically ill, loudly complaining patient who presents no specific disease.*

Conclusions

Greenhill says: "We consider the operation of the induced abortion one of the most dangerous in obstetrics."[4] Cosgrove says: "In one first-class American clinic 5.5% of the therapeutic abortions died as a direct result of that procedure."[1]

In North Carolina three women have lost their lives from complications of therapeutic abortions since August 1, 1946, and in each

3. Kuder, K., and Finn, W. F.: Therapeutic Interruption of Pregnancy, Am. J. Obst. & Gynec. 49:762-773 (June) 1945.

4. Greenhill, J. B., quoted by Cosgrove and Carter(1).

instance the primary disease was one which the patient could easily have survived with careful management. The widespread and more or less indiscriminate performance of abortion is recognized by all students of the subject as a major factor in puerperal mortality and morbidity.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

JOSIAH C. TRENT, M.D., F.A.C.S., *Editor*

OBSTETRICS AND GYNECOLOGY IN AMERICA

VI

DR. HOLMES ANSWERS THE QUESTION*

On Monday evening, February 13, 1843, the Boston Society for Medical Improvement gathered for a regular meeting in the society's rooms on Tremont Row. The paper for the evening was to be presented by Dr. Oliver Wendell Holmes, an active member of the society since 1836. From Dr. Holmes, the group had learned to expect variety—an anatomic anomaly, a bit of abstruse medical history, a warm defense of Louis's numerical system, a discourse on giants, or—for special occasions—amusing verses, such as his "ingenious . . . description of the two scourges of the human race, malaria and syphilis."[1] As *The Boston Medical and Surgical Journal* observed, Dr. Holmes was "alike celebrated for ready wit, a good song, and a candid investigation."[2] It was a candid investigation which he offered his colleagues on February 13—his essay, "The Contagiousness of Puerperal Fever."

Written "in a great heat and with passionate indignation,"[3] the essay answered a question proposed at a meeting of the society three weeks earlier. On January 23, the group had held an "animated discussion," evoked by Dr. John Barnard Swett Jackson. Dr. Jackson had asked the society's opinion "as to the contagion of Puerperal Fever and the possibility of physicians communicating it from patient to patient."[4] Within twenty-four hours, Dr. Holmes was raiding the Athenaeum Library for the literature of the disease[5] and badgering his fellow-practitioners for accounts of their experiences.

The immediate stimulus for his undertaking the investigation was Dr. Jackson's question, but the question itself was the culmination of a series of discussions of puerperal fever. In the minds of Holmes and his colleagues as they argued the point at the meeting of January 23 was the recollection of Dr. Jackson's report on the death of Dr. Barker of Lynn, a report given at a meeting on January 9. Dr. Barker had died as the result of a dissection wound incurred during an autopsy on a puerperal patient. At that same meeting, the obstetrician Walter Channing had presented—for the third time in six months—a report on a series of puerperal cases occurring in his practice[6]. The debaters would recall, too, the cases described by Dr. John Fisher on October 11, 1842—cases of dissection wounds, like that of Dr. Barker, incurred during an autopsy on a puerperal patient and resulting in severe illness for a doctor and death for a medical student[7].

Dr. Holmes had presided at the October meeting; he had heard Channing's three reports; the meeting of January 9 had impressed him so much that he made a special note of it in his medical case book[8]. He knew, too, that in Philadelphia Dr. Francis Condie had reported to the College of Physicians a series of puerperal fever cases and suggested the possibility of contagion[9]—a notion dismissed as nonsense by Dr. Charles D. Meigs, the leading Philadelphia obstetrician and author of the standard American text on obstetrics[10]. Dr. Jackson's query was all Holmes needed to set him going on his twenty-one day quest.

As the horrifying facts emerged from the literature of the disease, Holmes came to the unshakable conviction not only that puer-

*Miss Tilton has just completed a new biography of Oliver Wendell Holmes which is on the fall book list of Henry Schuman, Inc.

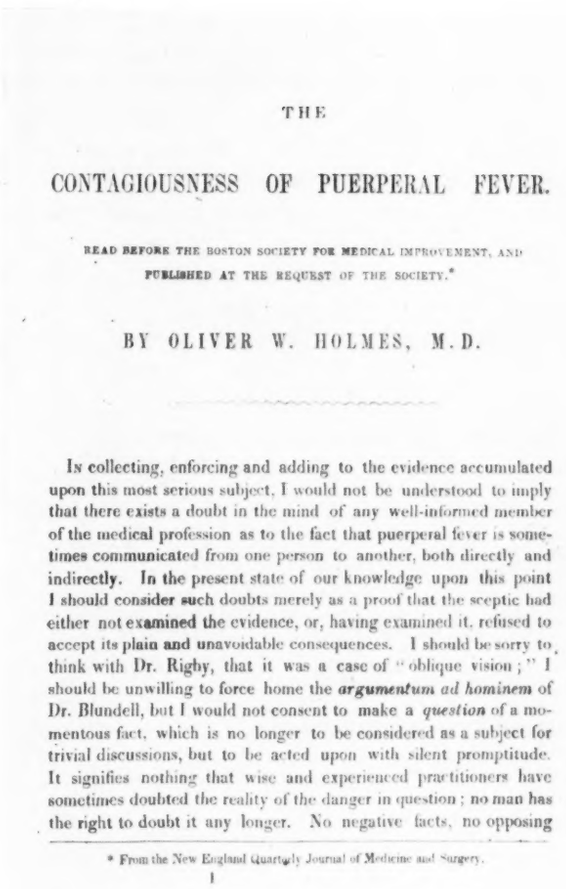
1. The manuscript records of the Boston Society for Medical Improvement, owned by the Boston Medical Library, are the source for this information. These records will be hereafter referred to as BSMI. The quotation is from BSMI 3:25 (Feb. 13) 1837.
2. Boston M. & S. J. 26:191 (Apr. 27) 1842.
3. Holmes, O. W.: Writings, Riverside Edition, Boston, 1891 (hereafter Works) 9:xvi.
4. BSMI 4:221.
5. Records of the Boston Athenaeum, ms., Boston Athenaeum.
6. BSMI 4:217-8. For Channing's earlier reports, June 27 and Nov. 28, 1842, see BSMI 4:167-8, 205.
7. BSMI, 4:190. Fisher's report is quoted by Dr. Henry R. Viets: A Mind Prepared, Bull. Med. Lib. Assoc. 31:222-3 (Oct.) 1943.
8. Holmes, O. W.: Medical case book for 1843, ms., Holmes Collection, Houghton Library, Harvard University.
9. Quarterly Summary Trans. Coll. Phys., Phila. 1:50-61 (May-July) 1842.
10. Med. Exam. (Phila.) 6:3 (Jan. 21) 1843.

peral fever is highly contagious but also that doctors and nurses are culpable agents of infection. The idea was not new, as Holmes found. Charles White of Manchester in 1773 and Alexander Gordon of Aberdeen in 1795 had expressed the same conviction. Other physicians after them had voiced the same opinion and advocated precautions, but the standard texts and the leading obstetricians ignored or denied the fact. To Holmes, the fact was so obvious that he could not regard the matter of contagiousness as debatable: "I would not consent to make a *question* of a momentous fact which is no longer to be considered as a subject for trivial discussion, but to be acted upon with silent promptitude."[11]

In his famous essay, Holmes plays not the roles of doctor and scientist, but those of prosecuting attorney and judge, marshalling the evidence, delivering the charges, and passing the sentence. The etiology, the morphology of the disease interest him not at all. It is the one fact—that the obstetrician himself is culpable—that he seeks to demonstrate. And no jury could fail to render a verdict of guilty:

> "There is no tone deep enough for regret, and no voice loud enough for warning . . . God forbid that any member of the profession to which [a woman] trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly."[12]

Moved by his eloquence and impressed by his evidence, the members of the Boston Society for Medical Improvement voted that Dr. Holmes be requested to publish his paper[13]. A vehicle for publication was at hand in the society's recently founded periodical, *The New England Quarterly Journal of Medicine and Surgery.* In the April issue appeared Holmes's essay[14]. But the society was a small, local club; however valuable its activities were to individual members, its doings would not attract much attention outside Boston. Its periodical, which had only a small circulation, and a few offprints from it (fig. 1) were the only means by which Holmes's arguments were disseminated in their entirety. A much less persuasive argument than the original essay was the two-page abstract in the July issue of *The American Journal of the Medical Sciences*[15].



THE

CONTAGIOUSNESS OF PUERPERAL FEVER.

READ BEFORE THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT, AND PUBLISHED AT THE REQUEST OF THE SOCIETY.*

BY OLIVER W. HOLMES, M.D.

In collecting, enforcing and adding to the evidence accumulated upon this most serious subject, I would not be understood to imply that there exists a doubt in the mind of any well-informed member of the medical profession as to the fact that puerperal fever is sometimes communicated from one person to another, both directly and indirectly. In the present state of our knowledge upon this point I should consider such doubts merely as a proof that the sceptic had either not examined the evidence, or, having examined it, refused to accept its plain and unavoidable consequences. I should be sorry to think with Dr. Righy, that it was a case of "oblique vision;" I should be unwilling to force home the *argumentum ad hominem* of Dr. Blundell, but I would not consent to make a *question* of a momentous fact, which is no longer to be considered as a subject for trivial discussions, but to be acted upon with silent promptitude. It signifies nothing that wise and experienced practitioners have sometimes doubted the reality of the danger in question; no man has the right to doubt it any longer. No negative facts, no opposing

* From the New England Quarterly Journal of Medicine and Surgery.

1

Fig. 1. The opening page of an offprint of Holmes's classic article, "The Contagiousness of Puerperal Fever" (1843). (Editor's collection)

It was this abstract rather than the original which provoked comments — among others, that of the Registrar-General of Great Britain, William Farr. Reviewing Farr's *Fifth Annual Report,* Holmes was pleased to find his ideas approved and praised, although regretful that the abstract had led Farr to say that he had not gone far enough[16]. In 1852, Copland's *Medical Dictionary* took up the argument *for* contagion, giving credit to Holmes's essay and reprinting his conclusions.

For about a dozen years, however, the question of whether or not the disease was carried from patient to patient by negligent doctors remained a matter of debate. American textbooks of obstetrics continued to deny the contagiousness of the disease. A little over a year after Holmes read his paper, Dr.

11. Works 9:128-9. See Heaton, Claude E.: Control of Puerperal Infection in the United States, Am. J. Obst. & Gynec. 46:479-486 (Oct.) 1943.
12. Works 9:167.
13. BSMI 4:223.
14. New England Quart. J. Med. & Surg. 1:503-30 (Apr.) 1843.
15. Am. J. M. Sc., n.s., 6:260-2 (July) 1843.
16. Holmes, O. W.: Medical Statistics, ms., n. d. (1846). Holmes Collection.

Channing (who had not been present on February 13, 1943) declared: "From his own experience he would never hesitate to visit other patients and to take charge of women in labor, when attending puerperal cases as a consulting physician."[17] In 1849 the subject was still open enough to warrant the Massachusetts Medical Association's appointing a committee of obstetricians to investigate it[18]. The strongest counterattack came from two Philadelphia physicians. In 1852, Dr. Hugh L. Hodge, professor of obstetrics in the University of Pennsylvania, published a volume *On the Non-Contagiousness of Puerperal Fever*. In 1854, Dr. Charles D. Meigs included in his book, *Childbed Fevers*, a long attack upon the concept of contagion; he had always preferred to attribute the many deaths from puerperal fever to "Providence."[19] Both Hodge and Meigs were abusive in their allusions to Holmes. The fourth of Meigs's papers, directed entirely against Holmes, described his essay as among "the jejeune and fizzenless dreamings of sophomore writers."[20] The obstetrician refrained from giving the title of the essay and referred to Holmes by name as little as possible, as if he feared to advertise his enemy. "How the hungry heads of that Hydra keep shouting out!" justly observed one of Holmes's friends, when he wrote to beg a copy of the already rare essay, that he might have ammunition against the Philadelphians[21].

To Holmes the fact that the doctrine he had advanced in 1843 was still treated as a *question* in 1855 was sufficient reason for reprinting the original essay, under the meaningful, if cacophonous, title, "Puerperal Fever as a Private Pestilence." He knew that Meigs and Hodges were "sure to be listened to, not only by their immediate pupils, but by the profession at large."[22] Significantly, Holmes addressed the introduction of his reprint to medical students; not without sarcastic intention, he wrote:

> "I had rather rescue one mother from being poisoned by her attendant, than claim to have saved forty out of fifty patients to whom I had carried the disease. Thus I am willing to offer this paper once more to the press. The occasion has presented itself, as will be seen, in a convenient if not flattering form."[23]

At the art of polite insult, Dr. Holmes was considerably more adept than his opponents.

At the close of his introduction, Holmes unleashed all his powers of eloquence:

> ". . . let it be remembered that this is no subject to be smoothed over by nicely adjusted phrases of half-assent and half-censure divided between the parties . . . Let it be rememberd that persons are nothing in this matter; better that twenty pamphleteers be silenced, or as many professors unseated, than that one mother's life should be taken . . . Indifference will not do here; our Journals and Committees have no right to take up their pages with minute anatomy and tediously detailed cases, while it is a question whether the 'black death' of child-bed is to be scattered broadcast by the agency of the mother's friend and adviser. Let the men who mould opinions look to it; if there is any voluntary blindness, any culpable negligence, even in such a matter, and the facts shall reach the public ear; the pestilence-carrier of the lying-in chamber must look to God for pardon, for man will never forgive him."[24]

After such an appeal, no unprejudiced reader could ignore the facts set forth so abundantly in the essay itself. The 1855 publication was promptly acknowledged in an enthusiastic review in *The American Journal of the Medical Sciences*[25]. Dr. Walter Channing changed his mind and wrote a paper confirming Holmes's views[26]. A year later, another obstetrician remarked that the contagiousness of puerperal fever was now generally admitted: "there are those in other sections of the country who deny its contagion—but they have been nearly silenced by the masterly essay of Dr. Holmes."[27] In the same year the American Medical Association added the essay to its list of recommended titles[28]. When Meigs in the 1857 edition of his *Obstetrics* stubbornly clung to his error, he was rebuked by a reviewer[29], who cited as the final authority on the subject—Dr. Oliver Wendell Holmes.

ELEANOR M. TILTON

17. BSMI 5:329.
18. Boston M. & S. J. 40:274-5 (May 9) 1849.
19. Meigs, C. D.: Obstetrics: The Science and Art, ed. 2, Philadelphia, Blanchard & Lea, 1852, p. 631.
20. Meigs, C. D.: On the Nature, Signs, and Treatment of Childbed Fevers, Philadelphia, Blanchard & Lea, 1854, Letter IV, p. 113.
21. Elisha Bartlett to Holmes, autograph letter, Dec. 3, 1852, Holmes Collection.
22. Works 9:126-7.
23. Works 9:106.
24. Works 9:127-8.
25. Am. J. M. Sc., n. s., 29:459-62 (Apr.) 1855.
26. Boston M. & S. J. 52:293-9 (May 17) 1855.
27. Boston M. & S. J. 54:81 (Feb. 28) 1856.
28. Trans. Am. M. Assoc. 9:372, 1856.
29. Boston M. & S. J. 55:490 (Jan. 15) 1857.

On the whole, the doctors I have known have been, I think, the finest men of my acquaintance. I may have been very fortunate, but that has been my experience. And I am thinking not only of their great skill—though I think I should think even more of them if they had discovered how to prevent and how to cure a common cold—but also I have found them always the kindest and wisest friends. —Dean Inge (1933)

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RACES VS. INDIVIDUALS

The miscarriage of justice which resulted in the acquittal of the twenty-six members of a lynching mob at Greenville, South Carolina, shocked the nation. It is true that the Negro who was lynched had murdered a taxi driver, but there is little doubt that he would have paid the full penalty for his crime had he been tried by a jury recruited from the vicinity of Greenville.

The complacency of North Carolinians who were somewhat smugly recalling the years that had elapsed since a lynching took place in this state was rudely shattered by the news that a Negro in Rich Square, suspected on rather flimsy evidence of attempted rape, had been taken by a mob from the custody of a jailer whose resistance was of the most passive type. Fortunately the members of the North Carolina mob were amateurs or were badly out of practice, for the prisoner escaped and later gave himself up to the sheriff. It was only their bungling that saved the Rich Square mobsters from the crime of mass murder.

The great majority of Southerners deplore lynch law as much as do the people of any other part of the country. It is a great mistake to hold all members of either race responsible for the crimes of individuals. Certainly the attorney for the Greenville taxi drivers offended decent citizens of the South as well as of the North when he spread the bedraggled banner of White Supremacy over the hoodlums who so brutally killed Willie Earle. On the other hand, it is to be hoped that some of the decent citizens of New York resented having the mother of Willie Earle address a mass meeting in Madison Square Garden. After all, Willie, as well as the mobsters, was guilty of a brutal murder. Many years ago that philosopher of the comics, Abe Martin, said something to the effect that people nowadays have so much sympathy for murderers that they are beginning to snub the victims' families. Let us hope that in their sympathy for Willie Earle, the people of New York will not despise Mrs. Brown, the widow of the taxi driver whom he murdered.

Mr. Vernon D. Strickland, in the *Roanoke-Chowan Times*, has said that the Negro criminal has no more sympathy from the colored people of Rich Square than from the white people, and that "there is no section in our country where cooperation, peace, tolerance and good will is more practiced and lived than here between and among the two races."

The same thing can be said of most sections of North Carolina. Let us hope that a few criminals of either color will not succeed in destroying the excellent relations between the two races.

OUR STATE MEDICAL SOCIETY AND PINEHURST

At the 1946 meeting of the Medical Society of the State of North Carolina, the House of Delegates voted to return to Pinehurst for the 1947 meeting. It was a distinct surprise—and something of a shock—when the manager of the Carolina Hotel notified Secretary Roscoe McMillan that the Society would have to look elsewhere for a meeting place. All efforts to find accommodations for the Society within the state were in vain, and Secretary McMillan was forced to make arrangements for the meeting to be held at Virginia Beach.

There have been numerous rumors in circulation as to the reason for this refusal on the part of the Carolina management to play host to the Society. The most persistent one is that the behavior of many of the doctors was responsible: that there was too much drinking; that hotel property was wantonly destroyed; that many doctors left without paying their hotel bills; and that some valuable pictures were stolen from the hotel rooms.

In an effort to learn whether these rumors had any basis in fact, President Frank Sharpe (then president-elect) interviewed Mr. Richard Tufts, owner of the Carolina Hotel, and Mr. Fitzgibbon, the manager. The letters subsequently exchanged between Dr. Sharpe and Mr. Tufts are published below.

May 17, 1947

Dear Mr. Tufts:

At the recent meeting of the North Carolina Medical Society, which was held at Virginia Beach, there were still rumblings about the report which had spread over our state insinuating that our Society was not wanted at The Carolina, because of misbehavior on the part of some of its members.

You will recall our conversation in this connection, and that you assured me this was incorrect, but that you were unable to entertain us this year because of previous commitments and the fact that your help was leaving earlier than usual for their work at a summer resort. This also was the reason given me by Mr. Fitzgibbon, Manager of The Carolina.

Will you be kind enough to give me a statement substantiating this so that it may be published in the **North Carolina Medical Journal?**

With my best wishes.

Sincerely yours,
Frank A. Sharpe, M.D.

May 20, 1947

Dear Dr. Sharpe:

Thank you for your kind letter of the 17th. We appreciate your writing so frankly in regard to the rumors which have been circulated concerning our reason for being unable to offer the North Carolina Medical Society a meeting date in Pinehurst this spring.

We are most anxious to dispose of these rumors as it is very disturbing to us to think that there has been any criticism on our part of the conduct of your members while in attendance at any of the meetings held here at Pinehurst. We have no criticism of this sort to make and there is consequently no foundation whatever for the rumor.

As I have previously explained to you, we were compelled to cut our convention schedule short this spring because of the early opening of one of the summer resorts where the majority of our employees go for the summer season. This cut considerable time off our usual convention schedule and much to our regret we have found it necessary to cut in half the number of meetings we had the pleasure of welcoming to Pinehurst in the spring of 1946.

In deciding which groups we would give preference to we adopted the policy of offering first choice to those who best fitted the capacity of the hotel and who also seemed disposed to make their meeting in Pinehurst an annual fixture. In the case of the Medical Society you will recall that your meetings have grown to such an extent that the facilities available here in Pinehurst are severely taxed. This reason plus the fact that your practice of using booths in the lobby of the hotel has resulted in quite a little damage to the property constituted our only reasons for the selection of other groups in filling our abbreviated schedule.

I sincerely hope that this information will dispose of these very unfortunate rumors which have no foundation in fact whatever and want to thank you again for your thoughtfulness in writing.

Sincerely yours,
Richard S. Tufts

It is gratifying to note that Mr. Tufts denies emphatically that the conduct of the doctors of North Carolina was responsible for the management's refusal to allow the Medical Society to meet in the Carolina this year. It is highly probable that the real obstacles to the Society's holding its annual sessions there will be removed before next year. Mr. Tufts was reasonably sure that the resort which has been employing the Carolina staff during the summer months will open later next year, so that the hotel's employees will not be lured away before the convention season is over. An effort is being made to make some arrangement whereby the exhibits will be accessible to all visitors, and yet will not fill the hotel lobby.

It is at least reasonably certain that the Medical Society of the State of North Carolina will hold its 1948 meeting somewhere in the state. While Tar Heel doctors are grateful to their Virginia neighbors for their hospitality, they have too much state pride to wish to leave North Carolina for two years in succession.

THE RESISTANT QUALITIES OF THE GASTRIC MUCOSA

Was it not Artemus Ward who said that he did not mind his ignorance so much as he did knowing so many things that weren't so? Nobody can appreciate the aptness of this statement more than the medical man. A brief article by Wolf and Wolff in the *New York State Journal of Medicine* for November 15[1] bowls over another long-cherished medical belief.

As is now well known, these authors have had the opportunity to study a modern Alexis St. Martin—a patient with a large gastric fistula. One of the most interesting observations they have made is that the gastric mucosa is far more resistant to irritating substances than is the skin. For example, 50 to 100 per cent alcohol produced a moderate erythema on the skin, but none at all on the mucous membrane of the stomach. Mustard produced a violent erythema of the skin, but only a moderate reaction on the gastric mucosa. "Such so-called gastric irritants as digitalis, ammonium chloride, ferrous sulfate, sulfonamides, aminophyllin, and so forth, are not irritants at all."

Even the time-honored emetics—copper sulfate and ipecac—induced no nausea when applied directly to the stomach lining. "The copper sulfate caused a precipitation of gastric mucus and on areas inadequately supplied with mucus, a slight edema and minute hemorrhages, but no nausea . . . Ipecac was found to cause no local change whatever . . ." Nausea was not induced until after these substances passed into the duodenum. "Whether nausea then resulted from local irritation of the duodenum or because of the effects of absorption of the drug or both is not clear."

This immunity of the gastric mucosa to irritation is ascribed to the fact that "the layer of slimy mucus which invests the stomach at all times protects it entirely from the action of irritants which cause erythema and blistering when applied to the skin of the forearm."

Even though we must revise our ideas concerning the effect of alcohol on the gastric mucosa, the prohibitionists may take comfort from the fact that no one has disproved its obvious effect upon the central nervous system. And, regardless of their *modus operandi*, ipecac and mustard will probably remain standard emetics for some time to come.

1. Wolf, Stewart and Wolff, Harold G.: Action of Drugs and Various Chemical Agents on the Gastric Mucosa and Gastric Function in Man, New York State J. Med. 46: 2509-2512 (Nov. 15) 1946.

* * * *

CONFUSING THE CAROLINAS

Some years ago, when a native son of North Carolina died after he had moved to New York and become famous, a number of New York papers gave South Carolina as the state of his birth. A Tar Heel editor, in commenting upon the frequency with which Northern writers confuse North and South Carolina, said he could forgive them much if they would even occasionally speak of Bob Reynolds as the senator from South Carolina.

The latest case of confusion between the two Carolinas occurred in an article by Dr. Homer L. Nelms, published in the *New York State Journal of Medicine* for April 15. This article, entitled "Is General Practice Becoming a Specialty?", is full of good common sense, and deserves to be read by all doctors. Two statements, however, should be corrected. One is that "in 1946 the American Medical Association for the first time conducted a Section on General Practice." It is true that in 1946 the Section on General Practice held its first sessions after it had been officially adopted into the A.M.A. family; but in 1943 and 1944 trial "Sessions for the General Practitioner" were held under the Section on Miscellaneous Topics. The 1945 meeting of the American Medical Association was called off by order of the O.D.T.

Dr. Nelms made his most serious mistake, however, when he said that "In 1936 the South Carolina Medical Society created a Section on General Practice. Ten other state societies have since done likewise." The Medical Society of the State of North Carolina, and not the South Carolina Medical Society, deserves credit for the first Section on General Practice.

Fortunately, Bob Reynolds is no longer in the Senate; and if Dr. Nelms will agree to forget that he ever represented North Carolina, and will further promise not to credit his able successor, Senator Clyde Hoey, to South Carolina, Tar Heel doctors will try to forgive him for his slight to their native state.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Presentation of Case

A 3-month-old male infant was admitted to the North Carolina Baptist Hospital on February 21, 1947, with a chief complaint of cyanosis since birth. This was most marked over the face, head, hands and feet. An x-ray of the chest made soon after birth showed the heart to be slightly larger than normal. He received one x-ray treatment for questionable enlargement of the thymus, but there was no improvement in the cyanosis. The cyanosis, which never disappeared, became worse when the baby cried.

The child gained 15 ounces the first month, 7 ounces the second, and 1 ounce the third. Four weeks before admission to this institution he was hospitalized elsewhere for seven days because of an upper respiratory infection. Treatment consisted of penicillin and oxygen. An x-ray of the chest showed that the heart had increased in size. Since that time he had been increasingly irritable, and the degree of cyanosis had increased. For the four days prior to admission the irritability had been even worse, and the infant cried most of the time. He was admitted for study and possible surgery.

Physical examination: The temperature was 98 F., the pulse 168, respiration 80, blood pressure 74 systolic, 30 diastolic. The circumference of the head was 15½ inches, that of the chest 13½ inches; the child's length was 23½ inches. He was a poorly developed, fairly well nourished 3-month-old male in acute respiratory distress, crying most of the time. There was generalized cyanosis, most marked about the mouth, nose, and nailbeds. The head was symmetrical, with flattening at the posterior fontanel. The anterior fontanel was 6 by 6 cm., and the posterior 3 by 3 cm.; neither was bulging. The pupils were round, regular, and equal; both reacted to light. There was marked retraction of the interspaces on inspiration, and the baby seemed to gasp for breath. The lungs were clear to percussion and auscultation. The left border of the heart extended 1 cm. outside the midclavicular line. The rhythm was regular. There was a grade 3 to-and-fro murmur over the entire precordium, loudest at the fourth interspace to the left of the sternum. The liver was palpated 1.5 cm. below the right costal margin. There was no clubbing of the fingers or toes. The rest of the examination was not remarkable.

Accessory clinical findings: The hemoglobin was 17.2 Gm., the red blood cell count 5,900,000, the white blood cell count 7,600, with 29 per cent segmented polymorphonuclears, 2 per cent non-segmented, 2 per cent eosinophils, 64 per cent lymphocytes, and 3 per cent monocytes. The urine showed a trace of albumin and sugar; there were 3 to 4 granular casts and 3 to 5 white blood cells per high powered field, in a centrifuged specimen. The electrocardiogram revealed a wandering pacemaker in the auriculoventricular node, and right axis deviation; the changes indicated myocardial disease. The abnormal findings on fluoroscopic and x-ray examination were dilated pulmonary vessels, marked cardiac enlargement with predominant enlargement of the right ventricle, absence of the aortic shadow on the left, and absence of the pulmonary conus.

An operation was scheduled. The baby nursed poorly and cried most of the time in the hospital. On the second day his respirations became more labored and the cyanosis more marked. He took his formula at 9 p.m., but suddenly stopped breathing two and a half hours later.

Discussion

DR. ROBERT B. LAWSON: In addition to the cyanosis of congenital heart disease, a newly born infant may show cyanosis due to poor aeration of the lungs, which may be caused by primary abnormality of the respiratory passages, or may be secondary to an intracranial lesion. Cyanosis on a respiratory basis is usually differentiated from that due to congenital heart disease by the changes that occur during crying. Crying causes the child to hyperventilate, and at the same time increases the work of the heart. For this reason, if the cyanosis is on a respiratory basis, the cyanosis will clear to some extent when the child cries; if it is due to a congenital cardiac defect, the cyanosis increases as it did in this case. Other bizarre causes of cyanosis, such as that due to an infant's drinking well water with a high nitrite content, do not need to be considered in this case. Although this infant was given roentgen therapy for a questionable enlargement

of the thymus, enlargement of the thymus is a rare cause of cyanosis, and practically never causes continuous cyanosis.

The course of this infant's development is quite consistent with congenital heart disease. There is a fairly satisfactory gain in the first month of life, but as the infant becomes more active, the cardiac defect becomes greater, and the weight gain becomes less and less satisfactory. As the child's air hunger increases, it is noted that he becomes irritable and restless.

Physical examination revealed abnormalities in two different systems. The abnormality in the skeletal system is of relatively little importance here. The head was large for his age, and was particularly large when compared with the circumference of the chest. There was flattening about the posterior fontanel, and the posterior fontanel was widely patent, whereas it should be closed at this age. The anterior fontanel was also large, but there is no mention of craniotabes. The retraction of the interspaces on inspiration may have been due to a softening of the thorax. Although it would be unusual to find rickets in a child this young, it is quite possible that there was an associated rickets in this infant. The large head with the wide-open fontanel could have been on the basis of a mild degree of hydrocephalus, however.

The most important findings in this infant relate to the heart, which showed marked enlargement, particularly of the right ventricle, together with considerable narrowing of the shadows produced by the great vessels. A loud to-and-fro murmur was heard over the precordium. The liver was enlarged. The child was obviously in cardiac failure.

The accessory clinical findings were consistent with a congenital cardiac defect, showing the marked increase in the hemoglobin and red cell count that one expects when the blood tries to compensate for a mixture of unoxygenated blood with oxygenated blood. The differential diagnosis is rather quickly narrowed down to those types of congenital cardiac defects which are associated with continuous cyanosis. We do not need to consider the acyanotic group of congenital cardiac defects, such as dextroposition and coarctation of the aorta. Nor do we need to consider that group of defects associated with intermittent cyanosis, which occurs during peripheral collapse or when the intrathoracic pressure increases so that the pressure in the right side of the heart becomes greater than the pressure in the left side. In such an instance there would be a right-to-left shunt of blood which would cause cyanosis only occasionally. In most cardiac defects the blood shifts from the left to the right, increasing the load on the left side of the heart but not producing cyanosis. Such defects would be uncomplicated interauricular or interventricular septal defects, or uncomplicated patent ductus arteriosus.

In this case we are undoubtedly dealing with one of that group of defects which are associated with a continuous mixture of unoxygenated (venous) blood and oxygenated (arterial) blood. The most common of these defects is pulmonic stenosis, which is usually associated with dextroposition of the aorta, an interventricular septal defect, and an enlarged right ventricle to form the tetralogy of Fallot. A complex which is similar to the tetralogy of Fallot, but in which the pulmonary artery is dilated instead of being atrophied, is called Eisenmenger's syndrome. Other defects which may cause continuous cyanosis are the one-, two-, and three-chambered hearts caused by the complete lack of one or all of the cardiac septa. We have seen such a case on this service before; it was diagnosed as Eisenmenger's syndrome, but at autopsy showed a unilocular heart with a complete mixing of the venous and arterial blood. Another type of defect that may give rise to continuous cyanosis is complete transposition of the great vessels, in which the aorta leads out from the right ventricle and the pulmonary artery leads out of the left ventricle. Such a defect is incompatible with life for more than a very short time unless there are other defects, such as a patent ductus arteriosus, or a septal defect, which will allow shunting of the blood from the right to the left side of the heart.

It would seem that this case can be explained best on the basis of the tetralogy of Fallot. The x-ray evidence of enlargement of the right ventricle and the electrocardiographic evidence of right axis deviation, indicating obstruction to the outflow of blood from the right ventricle, would lead us to make a diagnosis of pulmonic stenosis. The narrowing of the great vessel shadow can be explained by dextroposition of the aorta, and the absence of the shadow of the pulmonary

conus is common in pulmonic stenosis, since the diameter of the pulmonary artery is so much reduced. One can easily postulate the existence of a large interventricular defect to account for the cyanosis and the murmur which was described. It is true that the murmur in the tetralogy of Fallot is usually maximal at a higher point than in this case—usually in the second left interspace—and is usually systolic in nature. It is quite possible, however, that the murmur may be maximal at a lower point and may be to-and-fro, as in this case. There is some doubt in my mind that this murmur was actually systolic and diastolic, for it is very difficult to be sure about such a murmur with a heart rate of 168.

It is unusual to have a child with the tetralogy of Fallot expire this quickly. Ordinarily, patients with uncomplicated pulmonic stenosis and interventricular septal defect may live for many years, and go downhill very slowly.

It is possible that this child had a complete atresia of the pulmonary artery, associated with a patent ductus. Such a combination of anomalies would account for the clinical picture very well, and since this case is being presented at a clinicopathologic conference, I suspect that it is much more complicated than it sounds. I will stick with the law of averages, however, and offer as my diagnosis the tetralogy of Fallot, possibly with other cardiac anomalies.

Dr. Lawson's diagnosis:

1. Tetralogy of Fallot
2. Questionable hydrocephalus
3. Questionable rickets

DR. J. P. ROUSSEAU (Roentgenologist): On x-ray examination and fluoroscopy this child's cardiac silhouette was quite consistent with the tetralogy of Fallot. The chest film showed widening of the cardiac shadow, both to the right and left. By fluoroscopy, it was found that there was no posterior displacement of the esophagus—a fact which would imply that the left auricle was not enlarged. There was no roentgen evidence of enlargement of the thymus. The great vessels shadows were abnormally small, and the usual shadows of the aortic arch and pulmonary conus to the left of the sternum were absent. These findings are consistent with a diagnosis of the tetralogy of Fallot, which was the original roentgenologic impression, but could also be found with transposition of the great vessels.

DR. FREDERICK R. TAYLOR: In order to explain the diastolic murmur here, is it not possible that this child had an associated tricuspid valve stenosis? I also feel that it is unusual for a child to die this soon from the tetralogy of Fallot.

DR. WESTON M. KELSEY: It was the opinion of the house staff and attending staff on this case that this child had pulmonic stenosis, but we were worried about his rapid demise. Although we felt that some other abnormality might be present, we did feel that exploratory surgery should be done in the hope that a Blalock operation might be performed. However, the child went downhill too fast to make this possible.

Anatomic Discussion

DR. W. C. THOMAS: The circulatory system presented the interesting findings in this case, as one would expect. There was complete transposition of the great vessels. The aorta arose from the right ventricle, while the pulmonary artery arose from the left ventricle. The ductus arteriosus was patent, the lumen measuring about 2 mm. in diameter. There were no other abnormalities of the great vessels. There was a foramen ovale which measured 1 cm. in diameter. The dilatation of the left ventricle caused the predominance of this portion of the heart. The interventricular septum presented a defect which measured 3 mm. in diameter and was located in the base of the heart.

Sections through the lungs showed early bronchopneumonia.

Anatomic diagnosis

1. Complete transposition of the aorta and pulmonary artery with patencies of the ductus arteriosus, interauricular septum, and interventricular septum.
2. Bronchopneumonia.

Closing Discussion

DR. LAWSON: This has turned out to be a most interesting case. Transposition of the great vessels would naturally be incompatible with life, since there would be no connection between the pulmonary and systemic circulations unless additional defects were present. In this case some shunting of blood could occur through the patent ductus arteriosus and through the interauricular and interventricular defects. The rapid decline in

this infant did make most observers feel that some condition other than pulmonic stenosis might exist.

In view of the increasing interest in the surgical treatment of children with a patent ductus arteriosus and pulmonic stenosis, we must try to make more specific diagnoses than just "congenital heart disease." This case reminds us, however, that such specific anatomic diagnosis is not always easy.

MEDICOLEGAL ABSTRACT

J. F. OWEN, M.D., LL.B.

RALEIGH

DRUGLESS PRACTITIONERS: *"Penetration of tissues" by drugless practitioners is legal when it is done to secure information for diagnostic purposes. They may in certain instances prescribe drugs.*

This is an account of a case in which a drugless practitioner was charged by the Board of Medical Examiners with unprofessional conduct. There were many charges brought against the defendant, but only two were of medical interest. One accusation was that he "penetrated tissues" for the purpose of treatment, and the other charge was that he prescribed drugs. Both acts were specifically prohibited by the code of the state in which the suit was tried.

The evidence submitted was sufficient to satisfy the board that the defendant was guilty of the conduct alleged, and as a consequence they felt justified in revoking his license to practice the healing art.

The drugless practitioner thereupon appealed to the superior court, alleging that the hearing before the board was arbitrary and that he was not allowed to introduce certain legally relevant testimony. When this court sustained the findings of the board, the defendant sought redress before the Court of Appeals.

As to the first count, the appellate court was of the opinion that anyone engaged in the healing art should exert every effort to secure information for the purpose of arriving at a diagnosis, irrespective of the school of thought to which he belonged. The specific act here charged was that of securing one drop of blood for a hemoglobin determination. This could be done only for the purpose of aiding in making a diagnosis and not for treatment, and the court so held.

The other count charged the defendant with prescribing drugs for a patient — namely, "Min-a-rex" (a gland tablet) and "vitamin capsules." In this connection it should be mentioned that a chemist testified that the "Min-a-rex" or gland tablets were in reality a sea-water preparation, and that the vitamin capsules were food substitutes containing wheat-germ oil. Testimony also showed that the practitioner delivered the substances in the origial packages, without recommendation as to administration except the directions on the labels. It was held in this instance that there was no violation of the law, inasmuch as the preparations allegedly prescribed were not drugs, and if so were sold rather than prescribed.

The findings of the board and the superior court were reversed, and the appellate court ordered the license of the accused to be restored. The apparent unsoundness of such reasoning could perhaps be attributed to the failure of the prosecution to furnish the court with more detailed information concerning the dangerous potentialities of many diagnostic procedures. If allowed to go further, this line of thought might permit persons obviously untrained for such tasks to perform sternal punctures, obtain biopsy materials, carry out encephalographic studies, and perform many other diagnostic procedures which would entail great danger to the patient. As to the judgment rendered in the second charge, this can be dismissed with the statement that physicians consider any substance used for medicinal purposes to be drugs.

(District Court of Appeals, First District, Division 2, California, September, 1944. V. 20 Pacific (Second Series), p. 181)

BOND-A-MONTH PLAN

The banks of North Carolina will cooperate fully with the Treasury Department in offering the Bond-a-Month plan to depositors. The Bond-a-Month plan, which will be inaugurated on a nation-wide scale beginning June 1, is a method whereby bank checking account customers may purchase one or more U. S. Savings Bonds, series E, F or G, monthly by authorizing the bank to charge their accounts with the cost. The bank makes the necessary entries, issues the bonds and mails them to the depositor each month without any charge for the service.

TUBERCULOSIS ABSTRACTS

A Review for Physicians

Issued Monthly by the National Tuberculosis Association

Vol. XX June, 1947 No. 6

IT IS often overlooked that the ultimate control of tuberculosis will depend upon the effectiveness of the training given to the infected individual. Case finding in tuberculosis is of little value unless it is followed by treatment; to go to a sanatorium is not as important as to remain there until the disease is arrested; the permanence of the arrest in any case of tuberculosis is always a matter of personal discipline and vigilance. At every step of the road the physician must keep the conscious active cooperation of the patient. This comes about only when continuous education of the patient is carried on by the physician and those associated with him.

The Care and Education of the Tuberculous Patient in the Hospital

The care of a patient in any institution is dependent upon the physical facilities of the hospital or sanatorium; the proper balance of staff; and the quality of the staff. An adequate budget is necessary but money is not the entire answer. A well-equipped sanatorium may still be a cold, unsympathetic place. There must be an **esprit de corps** that starts at the top and carries through to every worker in the place.

The importance of a proper balance of staff is self-apparent. There must be enough physicians, enough nurses, a satisfactory dietetic service, enough social workers, enough rehabilitation workers, and enough accessory attendants to carry on the work properly.

The quality of the staff will depend upon the training, the experience and the personal interest of every person who takes part. Adequate salaries are necessary to attract and hold competent personnel.

Preemployment training and experience are desirable, and training should be continued throughout the period of employment. There should be frequent and regular staff conferences, not for the physician alone, but for the entire administrative group, the nurses, social workers, and rehabilitation workers. Not only medical and surgical treatment, but problems of discipline, emotional instability and psychological approaches should be discussed. The staff should all learn to think as a unit. As a result, when a physician advises a patient and the patient asks the same question of the nurse or the social worker, there will be agreement among them. Some may feel that only a doctor should discuss medical subjects, and that nurses, social workers, and others should always refer such questions to the doctor. That is true if the answers are difficult but no doctor ever loses prestige when his staff gives him informed backing and support.

In the treatment of tuberculosis the work of the doctor, the nurse, the social worker, and the rehabilitation worker so dovetail that they are frequently helping with the same thing. All four "practice medicine" in some way, whether it be in treatment, care, or maintaining the proper mental equilibrium of the patient. All four do a certain amount of nursing service. All four may be drawn into the domestic problems usually handled through the social worker. And all four take a part in rehabilitation. The direction and supervision of the work should be clean cut, but the better the understanding, the more effective will be the cooperation between staff members.

The care of the patient, then, does not depend upon physical facilities alone; it depends primarily upon the sympathetic understanding and cooperation of every person involved. This can only exist in a harmonious, well-trained, well-informed, interested, and intelligent staff.

The other half of the work is the education of the patient which is carried on through personal contacts of the staff, talks and lectures, books and periodicals on tuberculosis, sanatorium publications and visual aids of all kinds. The education of the patient starts with the day that the diagnosis is made. Then the first shock is received, and the patient's little world crumbles around him. Often he loses everything for which he has worked, saved, and planned. Usually he enters the sanatorium in a condition of mental chaos.

It is the job of every person who is in touch with this patient to sympathize, to help, to encourage, and to gain his confidence. The hope and assurance of recovery must be instilled, his family problems must be met, and his rehabilitation started at this time.

At first the patient is too stunned to appreciate or understand the rules of the game, but his education must start right at the beginning. It is important that the attitude of every staff member should be that of a teacher, giving the patient the hints and the rules which will be short cuts to recovery. Optimism should be the keynote.

When the first shock has worn off, the patient is in the mood to be a pupil in our school for tuberculosis. He will listen to other patients and get distorted ideas; he will listen to anyone and everyone. It is important, therefore, that his information be authentic. The lectures given, the books furnished, and the sanatorium publications all play an important part. If the staff is well trained, the questions can be intelligently answered. Each department head should take part of the responsibility for delivering talks and lectures.

The patient should be taught how tuberculosis develops, how it is diagnosed, and how it can be prevented. He should understand the different types of treatment and the objective of these treatments. He should be made to realize that his cure is within himself. He should be taught how the disease is spread and how to protect others. When this is done, we have reduced the hazard nearly 90 per cent. The patient should realize the importance of follow-up examinations long after discharge. He should know the length of time that it takes before he will be well, even after returning to a productive life. Too often the patient is discharged with a good prognosis from an institution, but because his education has been incomplete, he becomes careless and, as a result, his tuberculosis recurs.

The responsibility for patient education does not belong to doctors alone. It is the responsibility of every nurse, every social worker, and every rehabilitation worker who comes in contact with the patient. The sanatorium should not be a jail, but it should be a school for the education of the patient, and discipline is just as important as medication and treatment. A well-educated patient who leaves the sanatorium with consent, and is well on the road to recovery, seldom breaks down again. It is the careless patient who didn't learn the lesson who comes back to be readmitted.

Let's Improve the Care and Education of the Tuberculous Patient in the Hospital, Howard W. Bosworth, M.D., Transactions of the National Tuberculosis Association, 1946.

BULLETIN BOARD

INAUGURAL REMARKS

FRANK A. SHARPE, M.D.

During the past year it has been my privilege to attend most of the meetings of this Society's Executive Committee and of its various subcommittees, and to observe closely the job which President Coppridge and Secretary McMillan have so ably done. I have traveled to many portions of our state and heard the various problems confronting us debated *pro* and *con* by strong, honest men—at times with no cool tempers.

I am frightened and amazed at the tremendous responsibility which is placed upon the shoulders of anyone who is entrusted with the duties which I am about to assume. Any personal feeling of ego or exultation at being given so high an honor is dispelled by the deep sense of duty which goes with it.

Armies, industrial health centers, public health work, and such organizations have, during the past few years, greatly depleted the ranks of those of us available to care for the home folks.

The halls of our Congress are daily alive with suggested plans of legislation to regulate our work and our lives. Within our own state, a comprehensive program has been evolved to answer the demands for better medical care. Large sums of money have been appropriated to improve our medical facilities. To attain the goal set before us, we must have an earnest, cooperative spirit existing between the Medical Care Commission on the one hand and those of us who are to deliver the medical care on the other. Honest, constructive criticisms should be welcomed—selfish jealousies outlawed. The great teaching centers in our state will, I am sure, join hands in a friendly spirit for success. We, as individuals, must do the same.

The relationship between the medical profession and the public needs improvement. We doctors are not a mysterious group, as so many believe us to be.

Many problems immediately confront us. Simply to meet once each year and review the problems of the organization is not enough. Your Executive Committee will meet at frequent intervals; notice of the time and place will be given in advance through the NORTH CAROLINA MEDICAL JOURNAL. It is the duty of individual members or groups to bring before this committee their problems and suggestions, and we shall welcome them.

Let me thank you from the bottom of my heart for the high honor you have given me. With your help, I shall endeavor to serve you to the best of my ability.

EYE, EAR, NOSE AND THROAT SEMINAR

The second annual meeting of the North Carolina Eye, Ear, Nose and Throat Society and the South Carolina Society of Ophthalmology and Otolaryngology will be held at the Hotel Skyland in Hendersonville, North Carolina, on September 15, 16, 17 and 18. The first two days will be devoted to ophthalmology and the last two to otolaryngology. The following men will appear on the program:

Ophthalmology

Dr. Harold Brown, New York
Dr. John H. Dunnington, New York
Dr. Jack Guyton, Baltimore
Dr. Brittain F. Payne, New York

Otolaryngology

Dr. Edgar B. Burchill, New York
Dr. Louis H. Clerf, Philadelphia
Dr. Frederick A. Figi, Rochester, Minn.
Dr. Dean M. Lierle, Iowa City

Otolaryngologists and ophthalmologists from any other states are invited to attend.

Information about the course will be furnished by officers of either Society, whose names follow:

North Carolina Society:

Dr. V. K. Hart, president, Charlotte
Dr. W. E. Brackett, vice president, Hendersonville
Dr. J. A. Harrill, secretary-treasurer, Winston-Salem

South Carolina Society:

Dr. Ruskin G. Anderson, president, Spartanburg
Dr. S. Harry Ross, vice president, Anderson
Dr. Roderick Macdonald, secretary-treasurer, Rock Hill

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The following members of the faculty attended the Chicago meetings of the Federation of American Biological Sciences, May 16-23: Drs. K. M. Brinkhous and John B. Graham of the Department of Pathology, Drs. John H. Ferguson, A. T. Miller, and E. P. Hiatt of the Department of Physiology, and Dr. Fred W. Ellis of the Department of Pharmacology.

Dr. Brinkhous read a paper, "Clotting Defect in Hemophilia: Deficiency in a Plasma Factor Required for Thromboplastin Liberation from Platelets," before the meeting of the American Society for Experimental Pathology.

Dr. Ferguson presented a paper on "Tryptase (Plasmin) and Blood Coagulation" before a joint meeting of the Physiological and Pathological Societies.

Dr. Miller gave a paper, "The Excretion of the Blue Dye T-1824 in the Bile," before the American Physiological Society.

At the annual medical alumni luncheon at Virginia Beach on May 14, the following officers were elected for 1947-1948: Dr. A. H. London of Durham, president; Dr. M. D. Bonner of Jamestown, vice president; and Dr. Milton S. Clark of Goldsboro, secretary. The new president was authorized to enlarge the alumni visiting committee, which is to work in close cooperation with the Trustees' committee on the Medical School and the Dean in developing the plans for the School's expansion.

News Notes from the Duke University School of Medicine

On May 24 and 25 meetings were held at Charlotte Memorial Hospital, Charlotte, and the North Carolina Orthopaedic Hospital, Gastonia, at which trainees in the Orthopaedic Training Program at Duke University School of Medicine and other hospitals read medical papers to members of the orthopedic specialty and the personnel of the training program. Those who read papers from Duke are: Louis D. Britt, Ned M. Shutkin, Walter A. Hoyt, Ira N. Rapp, Julian B. Noel, Jack Hughston. Others included F. Payne Lee, John Baluss, both of Charlotte Memorial; George Sotirion, George B. Miller, and J. B. Carr, all of North Carolina Orthopaedic Hospital; Leonard J. Goldner and Ritchie Belser, Warm Springs Foundation; and Kearns Thompson and N. M. Roland, both of Shriner's Hospital.

This training program in orthopedic surgery has been established with the cooperation of the Warm Springs Foundation, Warm Springs, Ga., the North Carolina Orthopaedic Hospital, the Shriner's Hospital for Crippled Children, Greenville, S. C., Charlotte Memorial Hospital, and the orthopaedic division of the department of surgery at Duke. The training is on a competitive basis and all appointments are for one year. Fellowships are provided by the National Foundation for Infantile Paralysis. Engaged in the training are six first-year fellows, four second-year fellows, four third-year fellows, four fourth-year resident fellows, and one fifth-year resident fellow.

The personnel of the services participating in this program include: Dr. Robert L. Bennett, director of physical medicine, Warm Springs Foundation, Dr. Charles E. Irwin, Warm Springs; Dr. Oscar Miller and Dr. Julian E. Jacobs and associates, Charlotte Memorial Hospital; Dr. William M. Roberts and associates, North Carolina Orthopaedic Hospital; Dr. J. Warren White and associates, Shriner's Hospital; and Dr. Lenox D. Baker and Dr. Beverly Raney, Duke University School of Medicine.

* * * *

Dr. Frank Ober, formerly chief surgeon at the Peabody Home for Crippled Children, surgeon at the Boston Children's Hospital, and Professor Emeritus at the Harvard School of Medicine, visited the division of orthopaedic surgery at the Duke University School of Medicine in connection with his present work as representative of the fellowship committee of the National Foundation for Infantile Paralysis.

News Notes from the North Carolina State Board of Health

Patients may receive all the information they need to teach them the vitamin value of foods by writing to the Nutrition Division of the State Board of Health, in Raleigh. The "Basic Seven" chart lists articles of food that are not only rich in essential vitamins, but are very prevalent and palatable.

News Notes from the North Carolina Tuberculosis Association

At the annual meeting of the board of directors of the State association in Goldsboro on May 1 the following new officers were elected: Dr. Hillis L. Seay, president; Dr. M. D. Bonner, vice president; T. W. Steed, treasurer; and Elizabeth Smith, secretary. New directors-at-large are Dr. H. Stuart Willis, Sanatorium; Edwin Pate, Laurinburg; Dr. C. D. Thomas, Black Mountain; D. Hiden Ramsey, Asheville; and Harry McMullan, Jr., Washington. The following were elected as new representative directors: Max B. Fogleman, Warren County; Mrs. L. B. Heffner, Buncombe County; Dr. C. G. Milham, Richmond County; J. Tracy Moore, Greensboro; Columbia Munds, New Hanover; and Mrs. Gordon Shuford, Catawba County.

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Latham L. Miller, director of program for the NCTA, has resigned to accept a position as executive secretary of the Community Chest and Community Council of Raleigh and Wake County.

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The American Trudeau Society, in cooperation with the University of Colorado School of Medicine, is conducting a post-graduate course in thoracic diseases in Denver from July 28 to August 9. Appearing on the faculty is Dr. David T. Smith, professor of bacteriology and associate professor of medicine at Duke University School of Medicine. Dr. Smith will discuss actinomycosis, blastomycosis, bronchiectasis, and fungus diseases in general.

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The High Point Tuberculosis Association held a health institute for colored professional workers on April 28. Dr. Howard M. Payne, chief physician, Tuberculosis Division of the Freedmen's Hospital, Washington, D. C., was the speaker. The institute was sponsored by the Negro planning committee of the High Point Tuberculosis Association.

Tenth District Medical Society

The Tenth District Medical Society held its spring meeting in Asheville on May 28. Doctors participating on the program of the afternoon session were Dr. W. A. Sams of Marshall, Dr. George Rowe of Marion, Drs. C. N. Burton, S. L. Crow, Wallace R. Matthews, R. C. Nailling and Charles S. Norburn of Asheville, Drs. Thomas R. Nichols and L. W. Oehlbeck of Morganton, and Dr. Hugh A. Matthews of Canton. Guest speakers at the dinner meeting were Dr. E. A. MacMillan of Winston-Salem, Dr. Frank A. Sharpe of Greensboro, and Dr. Roscoe D. McMillan of Red Springs.

Dr. D. M. McIntosh of Old Fort is councilor of the Tenth District. Officers of the Society are Dr. B. O. Edwards of Asheville, Dr. F. O. Trotter of Hendersonville, Dr. Harry Miller of Murphy, Dr. A. E. Gouge of Bakersville, Dr. Harry Ditmore of Marshall, and Dr. D. M. McIntosh, Jr., of Marion.

North Carolina State Planning Board

The first comprehensive survey of all the service needs of North Carolina children and youth ever attempted was released recently by the State Planning Board Committee on Services for Children and Youth.

The twenty-eight page report, attractively printed in two colors and containing numerous illustrations, analyzes existing services in the fields of education, health, institutional care, employment regulations and income, recreation, and public welfare. Recommended remedies for the deficiencies indicated were cited as desirable goals toward which the state should strive.

News Notes

Dr. John Donnelly died at his home in Charlotte on April 9.

* * * *

Dr. Lawrence Byerly Holt of Lexington was married to Dr. Norma Ware of Macon, Georgia, on December 28.

* * * *

Dr. Robert Glenn Holt of Lexington was married to Dr. Margaret Nelson of Lawrence, Kansas, on April 7.

* * * *

Dr. Harold C. McDowell has announced his return from military service and the opening of his office for the practice of orthopedic surgery in Winston-Salem.

Notice of Change in General Qualifications for Eligibility to the Examination of the American Board of Orthopaedic Surgery

All candidates applying for Part I of the examination of the American Board of Orthopaedic Surgery after January 1, 1951, must have the following general qualifications:

General Qualifications

(a) He must be a citizen of the United States or Canada.

(b) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States or Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners; he must have been engaged in the practice of orthopaedic surgery in the United States or Canada for at least three years prior to submission of his application.

(c) He must have served an internship of twelve (12) months in a general hospital acceptable to the Board.

(d) **He must have spent a year on an approved surgical residency subsequent to the completion of his internship.**

NOTE: This change consists of an additional required year of surgical training before entering on special work in Orthopaedic Surgery.

No individual may apply for Part I of the examination of the American Board of Orthopaedic Surgery who has not completed at least one year in special orthopaedic training in addition to meeting the general requirements.

The Special Qualifications to fulfill the requirements for eligibility to both Part I and Part II of the examination will be furnished on request to the Secretary of the American Board of Orthopaedic Surgery.

The American Board of Orthopaedic Surgery
Dr. Francis M. McKeever, Secretary
1136 West 6th Street
Los Angeles 14, Calif.

International College of Surgeons

The twelfth annual assembly of the United States Chapter of the International College of Surgeons will be held at the Palmer House in Chicago, September 28-October 4.

National Mental Health Foundation

The membership of the National Mental Health Foundation, incorporated one year ago, has grown to nearly 3000, according to a report issued by Harold Barton, executive secretary, on the occasion of the Foundation's first birthday.

Anyone interested may join the Foundation as a voting member, with a voice in the direction of its activities, by payment of a $1 membership fee, to be mailed to the Foundation's national headquarters, 1520 Race Street, Philadelphia, Pennsylvania.

The Foundation is placing particular emphasis on public education to (1) give the public a basic understanding of mental afflictions in an effort to remove the stigma and superstition now surrounding mental handicaps; (2) publicize conditions and possibilities in public institutions; (3) mobilize public support for local, state and national efforts through active membership in a coordinated, nationwide, citizens' mental health movement; (4) provide public officials with reference material for planning effective legislative programs for prevention, treatment and care of mental disorders.

National Gastroenterological Association

The National Gastroenterological Association takes pleasure in announcing that First Prize in its 1947 Prize Award Contest for the best unpublished contribution on gastroenterology or an allied subject has been awarded to Dr. Frederic Duran-Jorda of Manchester, England. Dr. Duran-Jorda's paper on "Histo-Pathology of the Semi-Squamous Epithelial Layer as Found in the Colon" was selected by the Judges from among twelve entries received from all parts of the world.

National Foundation of Infantile Paralysis

Again during these summer months outbreaks of poliomyelitis are making their appearance in many sections of the country. Last year 25,191 cases occurred in the nation, 163 of them within this state. No one can forecast how many cases will occur this year or how badly the communities in this area will be affected. Medical science, unfortunately, cannot as yet prevent an epidemic or even one case.

In times such as these it is helpful to physicians to know that there are others prepared to share these troublesome burdens. In addition to making possible epidemic aid, education, and scientific research, the National Foundation for Infantile Paralysis is pledged to assist financially those patients who require such help. Through their generous contributions to the March of Dimes, the American people have made this possible. Hospital bills, salaries for physical therapists and nurses, purchase of special equipment, and the many other charges which may comprise the essentials of good medical care may be paid for by the chapters of the National Foundation when necessary. Local chapters of the National Foundation are scattered throughout the United States. There are chapters in each of North Carolina's one hundred counties. The local health department can furnish the address of the nearest chapter.

Physicians are urged to be more diligent in reporting all cases of poliomyelitis or suspected poliomyelitis to the health officer, so that every precaution may be taken to prevent its spread.

BULLETIN BOARD CONTINUED ON PAGE 386

AUXILIARY

THE TWENTY-FOURTH ANNUAL MEETING

The Auxiliary to the Medical Society of the State of North Carolina met at Virginia Beach in May, with headquarters at the Cavalier Hotel. Registration was on Monday, May 12. Mrs. Millard Hill, chairman of social activities, had planned for the first evening music in the lobby of the hotel, followed by a bridge party in the Panorama Room of the Beach Club. The following morning at 9, the Board of Directors met, and at 10:30 the general meeting was opened, with Mrs. Frederick Taylor of High Point presiding. Past presidents who were welcomed were: Mrs. P. P. McCain, Southern Pines, 1923-24; Mrs. B. J. Lawrence, Raleigh, 1928; Mrs. G. H. Macon, Warrenton, 1930; Mrs. K. B. Pace, Greenville, 1944; Mrs. Eric Bell, Wilson, 1946. Mrs. E. C. Judd of Raleigh, who has been treasurer of the Auxiliary for many years, was absent because of the commencement at the State School for the Blind, where she is a teacher.

Dr. Coppridge, president of the Medical Society, was presented. He gave a resume of what the Society has done for medical care in North Carolina. He urged education of the public through the help and intelligent cooperation of doctors' wives. The new officers were then installed by Dr. Rachel Davis. Prizes won by county and district auxiliaries were announced as follows:

1. The prize contributed by Mrs. F. R. Taylor for 100 per cent dues paid was won by the Hoke County Auxiliary.
2. The prize contributed by Mrs. P. P. McCain for the largest contribution to the McCain Endowment Fund was won by Guilford County.
3. The prize contributed by Mrs. G. M. Billings for the largest contribution to the Stevens Endowment Fund was won by Buncombe County.
4. The prize contributed by Mrs. M. D. Hill for the largest contribution to the Cooper Endowment Fund was won by the Edgecombe-Nash Auxiliary.
5. The prize contributed by Mrs. B. W. Roberts for the largest contribution to the Student Loan Fund was won by Guilford County.
6. The achievement prize, a silver loving cup and $25.00 contributed by Dr. Rachel Davis, was won by the Eighth District.

One particularly welcomed face at this meeting was that of Mrs. P. P. McCain. She attended her first medical meeting as a little girl with her father in 1908, and has missed few meetings since. In 1923 she was a leader in organizing the Auxiliary; she was its president in 1923-1924. Her medical record is unique: her father, Dr. McBrayer, was secretary of the State Medical Society; her brother, Dr. Reuben McBrayer, was a colonel in World War II; her husband, Dr. P. P. McCain, director of the State Tuberculosis Sanatoria, was killed in an automobile accident in November on a mission for the State Medical Society; her daughter, Irene, is a senior medical student at the University of Pennsylvania; her son, John, is a premedical student and expects to enter the University of North Carolina Medical School in the fall of 1948; her youngest daughter, Jane Todd, is a student at Agnes Scott, and at present plans to be a medical librarian. Governor Cherry has appointed Mrs. McCain on a special committee from the Board of Trustees to work with the medical school.

Tuesday afternoon at 4, a tea was given in the Hunt Room honoring our president, Mrs. Taylor; Mrs. William M. Coppridge, wife of the president of the Medical Society; Mrs. Roscoe D. McMillan, wife of the secretary-treasurer of the Medical Society; Mrs. W. Reece Berryhill, president-elect; Mrs. Frank A. Sharpe, wife of the president-elect of the Society; Mrs. Stuart Willis, wife of the superintendent of the three State Tuberculosis Sanatoria; and other guests of the Society.

At 7 that evening, members and their wives were entertained at a banquet in the dining room and ball room of the Cavalier. The President's Ball followed at the Beach Club.

The next morning those who could stay for another social hour were entertained at a Coca-Cola party at 10:30. After this, bags were packed and goodbyes were said. Once more doctors and their wives turned their faces toward home and another year's work, before meeting friends again at the next annual meeting.

MRS. C. C. CARPENTER,
Chairman of Press and Publicity
Winston-Salem

BOOK REVIEWS

Principles and Practice of Obstetrics. By Joseph B. DeLee, M.D., Late Professor of Obstetrics and Gynecology, the University of Chicago; Consultant in Obstetrics, the Chicago Lying-in Hospital and Dispensary; and J. P. Greenhill, M.D., Attending Obstetrician and Gynecologist, the Michael Reese Hospital; Obstetrician and Gynecologist, Associate Staff, the Chicago Lying-in Hospital; Chairman Dept. of Gynecology, Cook County Hospital; Professor of Gynecology, Cook County Graduate School of Medicine. Ed. 9. 1011 pages; 1108 illustrations on 860 figures, 211 in color. Price, $10.00. Philadelphia and London: W. B. Saunders Company, 1947.

This comprehensive textbook follows previous editions in outline and content, but is brought up to date by the addition of new subjects and new illustrations. The first half of the book deals with physiology and the latter half with pathology. The subject matter is divided into twelve sections and seventy chapters.

New chapters on erythroblastosis, care of premature infants, circumcision, and minor disturbances of pregnancy are included. The last subject necessarily introduces controversial methods of management. The author's regimen for the treatment of trichomonas vaginalis is quite vigorous and possibly should have been accompanied by a warning against the use of tampons and douches in certain stages of pregnancy. The chapter on erythroblastosis is concise and well presented. Care of premature infants is dealt with briefly, but the important features are well covered. The chapter on acute infectious diseases in pregnancy has been expanded to include typhoid fever, chorea gravidarum, German measles, scarlet fever, and meningitis.

The chapters dealing with physiology and with complications of pregnancy, labor, and the puerperium set forth sound principles found in the reliable textbooks on this subject. Throughout this volume one is impressed by the author's fairness and lack of personal prejudice. This virtue is carried almost to a fault at times, as in the author's detailed discussion of the use of a Voorhees bag in the management of placenta praevia—a practice to which he does not personally ascribe. Likewise, a confusing number of methods for management of the third stage of labor are described.

One of the best chapters in the text is the one dealing with toxemias of pregnancy. The differential diagnosis, etiology, pathology, treatment, and prognosis are presented with unusual clarity, although only twenty-five pages are devoted to this subject.

With the exception of those dealing with extraperitoneal cesarean section, the illustrations, including several new ones, are well chosen, well reproduced, and are quite helpful in supplementing the text.

This textbook remains one of the best-written, most practical, yet most comprehensive contributions to obstetric literature. It will continue to be of great value to student, to specialist, and to general practitioner.

The National Formulary. Ed. 8. 850 pages. Price, $7.50. Easton, Pennsylvania: Mack Publishing Company, 1947.

In 1938 the Council of the American Pharmaceutical Association adopted a plan under which the National Formulary would be revised at intervals of five instead of ten years. This plan reflected the rapidity with which changes have occurred in the use of therapeutic agents during the past fifteen years.

The purpose of the National Formulary is to establish official standards of purity, quality, strength and identity of drugs and their preparation. The inclusion of a drug is based not only upon its therapeutic value but also upon the extent of its use. Therefore many drugs are included in the National Formulary which are not included in the Pharmacopoeia. In this edition, which became effective April 1, 1947, 184 articles have been added and 176 articles which appear in N. F. VII have been deleted. The primary title of each drug monograph is in English, while the secondary is a Latinized version of the English title. Weights and measures are given in the metric system, followed by the approximate apothecary equivalent. The emphasis on the metric is to be commended.

The usefulness of the National Formulary is not confined to the above mentioned standards. The present edition continues the practice instituted in N.F. VII of including a chapter on reagents and preparations for use in the clinical laboratory and a chapter on the ingredients of reagents and preparations for use in the clinical laboratory. The last two chapters on general tests, reagents, test solutions, colorimetric solutions, pH, and so forth contain a wealth of information in a form readily available to the medical and pharmaceutical professions.

It would be presumptuous to recommend this book to the medical profession. Its usefulness has been recognized since the first edition, which appeared in 1888.

The Pharmacopoeia of the United States of America. Thirteenth Revision, 957 pages. Price, $8.00. Easton, Pennsylvania: Mack Publishing Company, 1947.

While it is hardly necessary to recommend a new revision of the **Pharmacopoeia** to the medical profession, the advent of a revision may warrant a reconsideration of the advantages of such a book. In a time when new drugs make their appearance at such a rapid rate that it becomes impossible for the physician to evaluate them, the critical and unbiased evaluation represented by their inclusion in this book is reassuring to the physician. Since the standards of quality, purity, and strength set up for drugs included in the **Pharmacopoeia** are enforced by the government under the authority of the Federal Food, Drug, and Cosmetic Act, the physician can prescribe these drugs with complete confidence.

The present revision of the **Pharmacopoeia**, which is the first under the plan for revision at approximately five-year intervals, became official April 1, 1947. Ninety-three articles have been added to U.S.P. XIII, and fifty-six articles which were official in U.S.P. XII have been deleted. Notable among the additions are: desoxycorticosterone acetate, digitoxin, digoxin, diphtheria and tetanus toxoids, protamine zinc insulin, lanatoside C, penicillin, nicotinamide, riboflavin, sulfamerazine, thiamine hydrochloride, testosterone propionate, and vinyl ether. An innovation in this revision is the use of English titles in the leading position determining the alphabetical arrangement of the monographs. Latin titles have been retained also.

Allergy in Theory and Practice. By Robert A. Cooke, M.D., Sc.D., F.A.C.P., Attending Physician and Director of the Department of Allergy, the Roosevelt Hospital, New York City. 572 pages, with 43 illustrations. Price, $8.00. Philadelphia and London: W. B. Saunders Company, 1947.

Dr. Cooke and his authoritative contributors have introduced a concise clinical text on allergy which, at the same time, presents the fundamental principles lucidly. The authors are to be commended for integrating theory into logical practice. Particularly in the chapter on allergic dermatitis, unification in theory, at least, has helped to clarify a subject which suffers from confusing terminologies. Aside from the subjects customarily treated in a text on allergy, the inclusion of others such as cardiovascular allergy and allergy of the nervous system presages the increasing domain of this specialty.

This book is highly recommended as an introduction to clinical allergy.

The Second Forty Years. By Edward J. Stieglitz, M.D., F.A.C.P. Foreword by Anton J. Carlson, M.D., Ph.D. 317 pages. Price, $2.95. Philadelphia and New York: J. B. Lippincott Company, 1946.

The excellence of this book is attested by the endorsement of the American Association for the Advancement of Science. The author, editor of **Geriatric Medicine**, is one of the country's leading gerontologists and is preeminently qualified to write an authoritative work on geriatrics for the lay reader. His book is a refreshing change from the pseudo-scientific writings so common today.

It is pointed out early in the discussion that the goal of the gerontologist (and of this book) is not to add years to the life but to add life to the years. The importance of the problem of aging is emphasized by showing graphically that in 1900 less than 18 per cent of our poulation was over 45, while conservative estimates indicate that by 1980 this figure will have risen to 40 per cent or above.

The author begins his discussion by describing the aging process and its results. He then takes up the common problems of senescence—"the handicapped heart," hypertension, nutrition, sex, and malignancies. Each one is explained in the light of modern scientific knowledge. The fact that the basis for a large percentage of these problems is laid many years before they appear is constantly emphasized. Prophylactic measures are also stressed, so that a person of any age can obtain benefit from this book.

Bodily well-being is only a part of the subject matter of the book. The author wisely treats, in detail, the philosophy and mental outlook of the aging and aged person.

About the only valid criticism which might be directed at the book is that the author often uses without explanation terms which are not familiar to lay readers.

This book should be of interest to all who are growing older, regardless of their age, and is highly recommended to physicians who treat patients over 40. It has excellent potentialities as an aid in the treatment of the more intelligent patients in "the second forty years."

Physicians Handbook. By John Warkentin, Ph.D., M.D., and Jack D. Lange, M.S., M.D., Ed. 4. 282 pages. Price, $1.50. Chicago: University Medical Publishers, 1947.

This pocket-sized compendium of clinical laboratory methods, clinical procedures, and facts has, since its first edition, been the constant companion of laboratory technicians, medical students, house officers and clinicians. It contains the essential factual data necessary not only for the collection, but also for the interpretation of laboratory and clinical findings in all the various branches of medicine. It is written in outline form, and contains many tables, diagrams, and graphs, giving a maximum of information in a minimum of space.

Because of its convenience of arrangement and size, this inexpensive handbook is almost indispensable for anyone in the medical profession.

BULLETIN BOARD

(CONTINUED FROM PAGE 383)

THE AMERICAN RED CROSS

Dr. Ernest Lyman Stebbins, director of the school of hygiene and public health and professor of public health administration of Johns Hopkins University, has been appointed chairman of the Advisory Board on Health Services of the American National Red Cross, Chairman Basil O'Connor has announced. Dr. Stebbins succeeds Dr. Lewis H. Weed, head of the division of medical sciences, National Research Council, who will continue to serve on the Advisory Board as a member of the committee on medicine. In recognition of his past services, Mr. O'Connor presented Dr. Weed with a special Red Cross citation upon his retirement.

VETERANS ADMINISTRATION

Establishment of a central laboratory for pathology in Washington, D. C., in cooperation with the Army Institute of Pathology, has been announced by Veterans Administration. The laboratory will provide a consultation, review and diagnostic service in pathologic tissues for VA's 126 hospitals and other medical facilities. In addition, VA pathologists will cooperate with the Army, civilian medical societies, and others in maintaining a central file of pathologic anatomy and related records for reference, research, training and long-range follow-up programs.

NEWS NOTES FROM THE OFFICE OF THE SURGEON GENERAL

Major General Bliss New Surgeon General Brigadier General Armstrong Deputy

Major General Raymond W. Bliss is the new Surgeon General of the Army, succeeding Major General Norman T. Kirk. His four year term began June 1. Brig. General George E. Armstrong assumes the duties of Deputy Surgeon General.

Since January 1, 1946, General Bliss has served as Deputy Surgeon General. General Kirk will retire from active duty.

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Aviation Medicine Course Announced

The recall of twenty Medical Corps Reserve Officers annually for a period of ninety days, for the purpose of attending a course of instruction and training in aviation medicine was recently announced by the War Department.

The Borden Company celebrated its ninetieth anniversary during the month of May, company officials have announced.

In the ninety years of its history, Borden's has branched into many fields. Today the company sells a complete line of dairy products, malted milk, mince meat, chocolate syrup, an instant coffee, casein and urea resin adhesives, soy bean products, pharmaceuticals, animal and poultry feed supplements, and many other products.